

# Open Research Online

---

The Open University's repository of research publications and other research outputs

## Linking child care to infant attachment : what lies in-between?

### Thesis

#### How to cite:

Robinson, Alex (2000). Linking child care to infant attachment : what lies in-between? PhD thesis The Open University.

For guidance on citations see [FAQs](#).

© 2000 The Author



<https://creativecommons.org/licenses/by-nc-nd/4.0/>

Version: Version of Record

Link(s) to article on publisher's website:

<http://dx.doi.org/doi:10.21954/ou.ro.0000d48b>

---

Copyright and Moral Rights for the articles on this site are retained by the individual authors and/or other copyright owners. For more information on Open Research Online's data [policy](#) on reuse of materials please consult the policies page.

---

[oro.open.ac.uk](http://oro.open.ac.uk)

**OXFORD DOCTORAL COURSE IN CLINICAL PSYCHOLOGY**

**Linking Child Care to Infant Attachment:  
What Lies In-Between?**

**Alex Robinson**

**A thesis submitted in partial fulfilment of the requirements of  
the Open University for the degree of Doctor in Clinical Psychology**

**July 2000**

**The British Psychological Society**

**Approximate number of words: 25 000**

**TEXT  
CUT OFF IN THE  
ORIGINAL**

## **Abstract**

**Objectives:** To investigate the relationship between maternal separation anxiety, hours in non-maternal child care and security of mother-infant attachment in early infancy.

**Design:** Prospective.

**Methods:** The participants for this study were 67 mothers and their infants enrolled in a large scale prospective study. The first 100 women were sent a letter outlining the current study and requested to 'opt in'. Those mothers who agreed to participate completed the Maternal Separation Anxiety Scale (MSAS) when the infant was ten and seventeen months. The mother-infant attachment relationship was assessed according to the standardised Strange Situation Procedure when the infant was aged seventeen months (+/- two weeks). All other data were collected in the main study.

**Results:** Maternal Separation Anxiety was not predictive (alone or in combination with other variables) of attachment status. Significant differences in levels of separation anxiety were found between mothers who were and mothers who were not

employed outside the home. Separation anxiety was also related to a number of variables, including the age of the infant when the mother planned to use non-maternal child care, the total hours of non-maternal child care, infant temperament and maternal sensitivity.

**Conclusions:** The non-significant results in the main analysis mean that no firm conclusions regarding a relationship between levels of maternal separation anxiety, hours in non-maternal child care and security of mother-infant attachment in infancy can be drawn. Future research (with a larger and more diverse sample) should continue to explore the concept of maternal separation anxiety in relation to a number of other variables, including maternal role preference and quality of child care, as it may hold important implications for social policy and preventative clinical work.

## Acknowledgements

I would like to take this opportunity to thank all of the people involved in this project.

I would particularly like to thank the mothers and babies who participated in this study. The strange situation procedure in itself was a daunting one for us all!

Secondly, I would like to thank the Families, Children and Child Care study for welcoming me into their team and supporting me throughout this project. Special thanks go to my supervisor, Dr Catherine Baillie who provided me with endless time, endless patience and most memorably of all, fantastic apple pie (fortification for body and soul!)

Thanks to Angela Triner whose administrative support was invaluable, to Nic for dealing with endless requests to find "just one more thing" and to 'the students' (Nikki, Jane and Lucy) for giving up their Saturdays to be 'strangers' and coping so admirably with the rejection from all those babies who wanted their mum and not you!

Thanks also to Dr Myra Cooper who could always be guaranteed to be there in times of crisis. Thank you to Paul Griffiths for your patience and your translation skills – statistics into English that is.

Thank you to all my family (particularly my brother Paul for salvaging my work from the wreckage of my computer at 3am) and friends, including fellow trainees. Finally Claire, the world's most tolerant flat-mate and fellow prisoner . . . what can I say? Thank you for everything. WE DID IT!

# **Table of Contents**

1.	INTRODUCTION .....	1
1.1	Overview .....	2
1.2	The Social Context of Child Care Research .....	2
1.2.1	The Origins of Guilt .....	3
1.2.2	The Changing Roles of Women .....	5
1.3	Attachment Theory .....	6
1.3.1	An ethological perspective .....	6
1.3.2	Assessing Attachment: The Strange Situation .....	8
1.3.3	Developmental Pathways .....	9
1.3.4	Attachment Beyond Infancy .....	10
1.3.5	Antecedents to mother-infant attachment status .....	11
1.3.6	Summary .....	14
1.4	Linking Child Care to Attachment .....	15
1.4.1	Studies of early child care .....	15
1.4.2	A Cumulative Risk Model of Development .....	17
1.5	Maternal Separation Anxiety .....	17
1.5.1	Separation from the infant .....	17
1.5.2	Definition and Background to the Concept of MSA .....	18
1.5.3	Assessment: The MSAS .....	18
1.5.4	Characteristics of Maternal Separation Anxiety .....	19
1.5.5	Maternal Separation Anxiety and Maternal Behaviour .....	19
1.5.6	MSA, Employment Status and Infant Attachment .....	20
1.5.7	Investigating Interactions .....	22
1.5.8	Limitations of the two studies .....	26
1.6	Rationale for the Present Study .....	28
1.7	Hypotheses .....	31
2.	METHOD .....	34
2.1	Design .....	35
2.2	Participants .....	35
2.3	Measures .....	36
2.3.1	Demographic Information .....	36
2.3.2	Employment and Child Care Arrangements .....	36
2.3.3	SEC .....	37
2.3.4	Infant temperament .....	37
2.3.5	Maternal Sensitivity .....	39
2.3.6	Maternal Separation Anxiety .....	41
2.3.7	Mother-Infant Attachment .....	44
2.4	Procedure .....	46
2.5	Ethical Approval .....	47

3.	RESULTS .....	48
3.1	Response Rate and Sample Size .....	49
3.2	Demographic Data .....	49
3.2.1	Infant characteristics .....	49
3.2.2	Family Characteristics .....	50
3.2.3	Maternal Characteristics .....	50
3.2.4	Employment and Child Care Characteristics .....	51
3.3	Investigation of Hypotheses .....	54
3.3.1	Methods of Analysis .....	54
3.3.2	Stage One: Relationships between variables .....	54
3.3.3	Stage Two: Investigating hypotheses 1 - 5 .....	57
3.4	Exploring trends in the data .....	66
4.	DISCUSSION .....	86
4.1	Overview .....	87
4.2	Summary of research findings .....	88
4.2.1	Demographic and descriptive data .....	88
4.2.2	MSA and child care, temperament and sensitivity .....	90
4.2.3	Summary .....	93
4.2.4	Investigation of Hypotheses .....	93
4.3	Key Findings .....	100
4.4	Methodological Considerations .....	101
4.4.1	Characteristics of the sample .....	101
4.4.2	Sample size .....	102
4.5	Interpretation of findings .....	102
4.6	Clinical and Service Implications .....	108
4.7	Limitations and ideas for future research .....	110
4.8	Conclusions .....	113
5.	REFERENCES .....	117
6.	APPENDICES .....	134
	Appendix 1 .....	135
	Appendix 2 .....	136
	Appendix 3 .....	141
	Appendix 4 .....	145
	Appendix 5 .....	148
	Appendix 6 .....	150
	Appendix 7 .....	151
	Appendix 8 .....	153
	Appendix 9 .....	154
	Appendix 10 .....	156
	Appendix 11 .....	157
	Appendix 12 .....	158
	Appendix 13 .....	159



## **Section 1**

# ***Introduction***

## **Section 1: Introduction**

### **1.1 Overview**

Taking the attachment paradigm as a framework, this study aims to investigate the relationship between maternal separation anxiety, hours in non-maternal child care and security of mother-infant attachment in early infancy. Section 1 begins by drawing attention to the sociocultural context in which such research is carried out and goes on to provide the theoretical and clinical context for the current study, with a review of the relevant empirical literature. This includes an introduction to attachment theory and research, including studies of the 'effects' of child care on the developing mother-infant relationship. Finally, there is an introduction to the concept of 'Maternal Separation Anxiety' and the somewhat limited literature pertaining to the mother's experience of separation (anticipated or real) from her child and its consequences for the developing mother-infant relationship. The section concludes with the rationale for the current study, together with a number of theoretically driven hypotheses.

### **1.2 The Social Context of Child Care Research**

Child care research is a socially sensitive area of investigation, carried out at the interface between social science and social policy. This means that how it is formulated, conducted, interpreted and reported will have social as well as scientific relevance. Psychologists are part of the wider society, and many

will be parents themselves. They too are likely to share the dominant ideological notions about what 'normal mothers' and 'normal children' should be like (Burman, 1991). Failure to acknowledge this may lead to research questions being formulated more in terms that are driven by dominant but implicit social values than by considerations of relevance to the development of scientific enquiry.

### **1.2.1 The Origins of Guilt**

The widely held belief in the importance of a mother who is available for child care on a full-time basis has previously led to the blaming of employed mothers for problems of child development, delinquency, marital breakdown and the dissolution of the traditional nuclear family (Lewis, 1991). In this study the spotlight is once again on mothers. The reason for this is simple - women are still the primary caregivers in our society and, as Angela Neustatter points out in a recent article for *The Guardian* (2000), "biological destiny puts us in the hot seat".

#### ***Career or carer?***

There is still little support for the notion that women with young children ought to work. In one survey in which British people were asked to state what work arrangements they view as best for families with children, almost 80 per cent stated that the mother should be at home when the children are under five. In response to the question 'should a woman work when her children are under school age' over half of the respondents said that she should not, whilst one

third said that she should only work part-time (Morgan, 1996). Such findings may go some way towards explaining the guilt reported by many working mothers, clearly illustrated in the following quotation:-

•  
*Today, guilt is inflicted on mothers who consider working and leaving their babies in others care. Not only do friends and relatives suggest in subtle and not so subtle ways that we neglect our children if we choose to work after motherhood, but we have built-in sources of guilt that give each of us nightmares.*

S. Scarr and J. Dunn, *Mother Care: Other Care* (1987)

Despite the widely held belief that women with young children should not be working there is also evidence of a competing cultural directive stating that women should no longer submerge themselves in domesticity but instead, successfully balance the demands of motherhood and employment. This notion is reinforced in the media where we hear tales of the 'supermother' advancing up the career ladder whilst at the same time successfully fulfilling the role of 'good mother'.

### ***A state of conflict***

It is clear that some women today find themselves in a difficult position when it comes to motherhood and employment. The 'internal conflict' described by many, is reinforced by the media and selective reporting of research into the 'effects' of child care on children's development. For example, a recent *Panorama* programme made for the BBC prompted an outraged response from those who recognised the methodological limitations of studies on which

conclusions regarding the educational failure of children with full-time working parents were based.

Jayne Baxton reflects on the conflict for today's women in her book *Ending The Mother War*, an extract of which appeared in *The Sunday Times* (Baxton, 1998). The 'Mother War', which she describes, refers to the 'battle' between 'Earth Mother' and 'Supermother', "... each fighting from their own extreme polarised view ... each view rooted in some powerful myths about motherhood". As Baxton points out, such extreme views allow no space for a middle ground.

### **1.2.2 The Changing Roles of Women**

Conflict aside, employment rates for women with a child under the age of five are rising: from 30 per cent in 1985 to 43 per cent in 1991 (full or part-time). Today the figure is estimated at around 50% (Office for National Statistics, 1997). Whilst two-thirds of employed mothers are working part-time, full-time employment has increased faster than part-time over the last 10 years (Brannen, Moss, Owen and Whale, 1997).

Thus women's roles, both within and outside of the family are changing with many now balancing the role demands of both caregiver and financial provider. This means that frequent, in some cases daily, separations from the infant have become an inevitable part of many women's lives and the demands for purchased child care have increased. Between 1986 and 1996,

the number of places in day nurseries provided by the independent sector had increased by more than 400%, while the number of places offered by childminders increased by 173% (Department of Health, 1997).

Following such change, the influence of non-maternal day care on early child development has become the subject of intense investigation. A large proportion of the research in this area has been concerned with investigating the impact of non-maternal child care on the child's cognitive development, generally measured in terms of academic attainments. However, a number of studies have focused their attention on the question of *early attachment*, with the rationale that maternal employment, particularly during the infant's first year, may interrupt the development of the mother-infant bond (Belsky, 1988).

### **1.3 Attachment theory**

This next part of section one provides an introduction to attachment theory and research.

#### **1.3.1 An ethological perspective**

Drawing on evolutionary theory and observations of non-human primates John Bowlby called attention to an attachment behavioural system having primary and immediate responsibility for regulating infant safety and survival in the environment of evolutionary adaptiveness (Bowlby, 1969; Bretherton, 1992). The development and organisation of this instinctively guided system was used to explain the child's behavioural and emotional responses to

separation and loss (Main, 1994). The attachment system is said to be activated by threat (real or perceived) and leads to proximity and comfort seeking, which in turn, elicits the care-giving system.

Attachment is defined as 'the tendency for the child to show a marked preference for a specific person, to derive security from being near that person, especially when frightened, tired or ill, and to protest if they go out of sight' (Tizard, 1991). First attachments are usually formed by about seven months of age. All children are said to be biologically biased to form an attachment to the person (or persons) looking after them, even children who are abused by their caregiver.

### ***Internal Working Models***

Bowlby stated that the root of personality development is in the child's early relationship with (and attachment to) his/her mother and the concept of the 'internal working model' was developed (see Bowlby, 1973) to explain the long-lasting influence of the early attachment relationship. Simply put, the idea is that children in a warm, loving relationship with their mother will go on to develop a model of themselves as loveable and others as trustworthy, whereas children who have not had this experience will believe themselves incapable of being loved, and will see others as untrustworthy or rejecting (Tizard, 1991).

### **1.3.2 Assessing Attachment: The Strange Situation**

The study of attachment was promoted by Mary Ainsworth's development of a procedure (termed 'the Strange Situation') to identify three organised patterns in the infant's response to two brief separations from, and reunions with the mother in a laboratory environment (Ainsworth, Blehar, Waters and Wall, 1978; Bretherton, 1992).

Responses to the Strange Situation were first observed and recorded in conjunction with Ainsworth's year long observational study of 26 Baltimore infant-mother dyads. In this study, infants who showed signs of missing the mother when she left the room, who greeted her actively on her return and then resumed their play were noted to have used the mother as a "secure base" for exploration in the home. These infants were labelled 'securely attached'.

In contrast, some infants appeared preoccupied with the mother throughout the procedure. These infants, labelled 'insecure-ambivalent', were either markedly angry or markedly passive and they did not settle and return to play when the mother returned. A third group of infants focused on the toys in the room, failed to cry on separation from the mother and actively avoided her on reunion. These infants were labelled 'insecure-avoidant'.

A fourth category of attachment has since been added to the classification system. This category is less well defined than the original three, but



contains behaviour described as 'disorganised' or 'disorientated' (Ainsworth and Eichberg, 1991). These infants appear to be distressed by their mother. They behave in a frightened way, often lying prone on the floor or 'freezing'.

The proportion of attachment security in infants does not seem to vary much across cultures, with rates of 55-65% most commonly reported. However, the type of insecure attachment patterns do vary, according to cultural context. The most common type of insecure attachment in American and North European cultures is the avoidant one, but in Israel and Japan it is the anxious/ambivalent one (Van Ijzendoorn, 1995).

### 1.3.3 Developmental Pathways

*"... the pathway followed by each developing individual and the extent to which he or she becomes resilient to stressful life events is determined to a very significant degree by the pattern of attachment developed during the early years" (Bowlby, 1988).*

Bowlby's concept of developmental pathways has been well documented and the predictive validity of a number of attachment assessments is well established for different age groups. Several follow-up studies (e.g. Sroufe, 1988) have demonstrated that security of attachment in infancy is a good predictor of later emotional and social adjustment.

More specifically, **secure infants** have been found to demonstrate: substantially greater concentration in play (Belsky and Isabella, 1988); more

positive affect (Sroufe, 1985); more positive perception of self (Verschueren, Marcoen and Schoefs, 1996); greater social competence (Sroufe, 1985); better performance on achievement tests at age seven (Fagot, Gauvain and Kavanagh, 1996); greater language skills during childhood (Van Ijzendoorn, Dijkstra and Bus, 1995); greater conflict resolution skills during childhood (Cassidy, Kirsh and Scolton, 1996); and better school adjustment in general (Teo, Carlson, Mathieu, Egeland and Sroufe, 1996). **Avoidant infants** have been found to demonstrate less externalising behaviours and are often judged to be less socially competent than their peers at school (Moss, Parent, Gosselin, Rousseau and Stlaurent, 1996). They are also most likely to be rejected by teachers and most likely to victimise other school children (Greenberg, Chicetti and Cummings, 1990). Finally, **ambivalent infants** have been found to demonstrate a higher level of externalising behaviour; are more likely to be "cosseted" by teachers; and are most likely to be victims at school (Greenberg et al, 1990).

#### **1.3.4 Attachment Beyond Infancy**

A number of claims have been made regarding the ways in which insecurity in a person's attachment relationships with parents in early childhood influences their relationships in adult life (Main, 1991; Main and Hesse, 1990; Main, Kaplan and Cassidy, 1985). Hazen and Shaver (1994) provide a review of the features of adult relationships believed to reflect insecure attachment. These include both a lack of self disclosure and indiscriminant, overly intimate self-disclosure; undue jealousy in close relationships; feelings of loneliness

even when involved in relationships; reluctance to commitment in relationships; difficulty in making relationships in a new setting; and a tendency to view partners as insufficiently attentive. It remains to be seen whether these characteristics have the same meaning as the qualities of insecurity observed in infancy (Rutter, 1996).

### ***A cautionary note***

Sroufe (1988) suggests that we must not overextend predictive claims of attachment theory and that the specific claims concern the child's developing sense of inner confidence, efficacy, and self worth, together with aspects of intimate personal relationships, such as the capacity to be emotionally close, to seek and receive care, and to give care to others. The significant associations that have been found between insecure attachment in infancy and a number of later psychopathologies in both childhood and adult life (see Belsky and Cassidy, 1994) are of moderate strength and the findings are not consistent across studies (Rutter, 1996). However, what the research does suggest is that whilst insecure attachment should not be equated with psychopathology, it may be regarded as an important vulnerability factor (Rutter, 1995).

### **1.3.5 Antecedents to mother-infant attachment status**

The quality of the mother-infant attachment relationship is believed to have its roots in early maternal interactional style (Ainsworth, Bell and Slayton, 1978). It has been suggested that each of the attachment categories has its own

precursors in patterns of mother-infant interaction, with its own behavioural sequelae (Main, 1994).

#### 1.3.5.1 Maternal Sensitivity

Bowlby's theory (1969) gives a central role to *maternal sensitivity* in the development of a secure mother-infant attachment. Ainsworth and her colleagues assessed a number of dimensions of maternal behaviour (observed in the home) and noted that babies who were securely attached at 12 months had mothers who were more affectionate towards them, more effective in soothing them and more often engaged in face-to-face behaviour and physical contact. In contrast, insecure-ambivalent attachments were associated with insensitive caregiving and inept handling of the infants, whilst insecure-avoidant attachments were associated with 'rejecting' mothers (Ainsworth et al, 1978).

Over twenty years of research have continued to highlight maternal sensitivity to the infant's cues as an important characteristic of maternal behaviour with links to attachment security. In a meta-analysis (66 studies, N = 4,176) of the parental antecedents of attachment security, De Wolff and van Ijzendoorn (1997) sought to examine the strength of the relationship between maternal sensitivity and security of mother-infant attachment. Their results suggested that maternal sensitivity is an important, but not exclusive condition of attachment security and attention is drawn to the social context of the mother-infant dyads that have been studied over the years.

### **1.3.5.2 Other Factors: Infant Temperament and Psychosocial Stress**

Whilst studies have demonstrated a moderate association between maternal sensitivity and security of attachment in infancy, a large proportion of the variance in patterns of attachment remains unexplained. A key question thus concerns how parenting qualities (such as maternal sensitivity) might interact with other variables in the development of attachment relationships. The effects of infant temperament and psychosocial stress have been investigated in a number of studies.

#### ***Infant Temperament***

Infant temperament is now viewed as a less important variable in the developing mother-infant attachment relationship than was once thought. Evidence of connections between temperament and attachment security are limited, although a temperamental dimension reflecting 'negative emotionality' was found to be associated with insecure attachment in two studies (see Thompson, Connell and Bridges, 1998; Vaughn, Stevenson-Hinde, Kotsaftis et al, 1992).

Undoubtedly, an infant brings with him/her a particular temperament into the relationship which may make it more or less easy to care for him/her.

However, in a review of the literature, temperament (defined in terms of 'distress proneness') was not found to be a major determinant of attachment security (Belsky, Rosenberger and Crnic, 1995). What the evidence does

suggest, is that certain 'emotional' characteristics of the infant (e.g. irritability) can be substantially modified by the mother's own behaviour and personality, as well as by the quality of the marital relationship (Fish and Belsky, 1991; Kochanska, 1995).

### ***Psychosocial stress***

In the face of multiple adversities a mother is likely to become highly stressed and distressed and this may have a negative impact on the developing mother-infant relationship. In their review of the literature, Belsky et al (1995) noted a strong relationship between the degree of environmental stresses and rates of insecurity, so that as the number of stresses increased, so too did rates of insecurity. Further evidence for the negative impact of psychosocial stress comes from studies of children brought up in economically disadvantaged homes which show that these children are more likely to be insecurely attached to their mother (Spieker and Booth, 1988; NICHD, 1997).

#### **1.3.6 Summary**

After setting the scene for a study of infant attachment, with reference to the social context in which such research is embedded, the first half of this introductory section has sought to highlight relevant features of attachment theory and research which inform the current study.

The attachment literature is vast, and still growing. This means that a comprehensive review is far beyond the scope of this thesis. For the purposes of this study, this is not necessary. What has been highlighted is the need to consider mother-infant attachment from a broader, more systemic perspective.

With this in mind, the second half of this section goes on to consider maternal employment and the use of non-maternal child care in relation to mother-infant attachment security, maternal, infant and family characteristics.

## **1.4 Linking child care to attachment**

Morgan (1996) suggests that the attachment relationship may be vulnerable to disruption if relaxed time is not available in which to learn the infant's particular signals and responses. Related to this is the notion that hours away from the mother during the first year of life may adversely affect the proximal processes of mother-infant interaction and thus interfere with the attachment relationship (Jaeger and Wienraub, 1990; Owen and Cox, 1988). It has also been suggested that time for parenting in the period following birth may be essential, not only to the development of the infant, but for the whole family system (Bronfenbrenner, 1979).

### **1.4.1 Studies of early child care**

The idea that routine non-maternal care in the first year of life might adversely affect the security of the infant's attachment to the mother has been the

subject of much discussion and debate (Belsky and Steinberg, 1978; Fox and Fein, 1990; Karen, 1994; Rutter, 1981). In the 1980s, several multi-study analyses documented statistically significant associations between early and extensive child care (defined as 20 or more hours per week of routine non-maternal care in the first year of life) and elevated rates of insecure attachment between 12 and 18 months (Belsky and Rovine, 1988; Clarke-Stewart, 1989; Lamb and Sternberg, 1990). However, more recent studies of infants entering care in the 1990s have not supported a direct link between non-maternal care in the first year and attachment insecurity (e.g. Roggman, Langlois, Hubbs-Tait and Reiser-Danner, 1994; Symons, 1998).

A group of researchers in the USA have recently begun to report on the results of a large, multi-centre study of early child care (NICHD Early Child Care Research Network, 1994). Families were drawn from a range of backgrounds (varied income, education, ethnicity, family structure and mother's employment). One of the important findings to emerge from this study, is that child care characteristics (e.g. type of care (which includes parental care), hours, quality, age of entry) were not, on their own, predictive of attachment security in the infants (measured at 15 months). A secure attachment relationship was found to relate to child care, infant and maternal characteristics, in interaction.



### **1.4.2 A Cumulative Risk Model of Development**

Findings such as these support a 'cumulative risk model' of development, in which certain factors (such as low maternal sensitivity and poor quality child care; or boys in long hours of child care) interact to increase the chances of an insecure attachment relationship (NICHD, 1997). Such research suggests that non-maternal child care *per se* is not a sufficient condition for the development of an insecure mother-infant attachment, and that other factors may influence child outcomes. This has led to a shift of attention, away from the *effects* of non-maternal child care towards a focus on the *processes* mediating observed links.

## **1.5 Maternal Separation Anxiety**

The last part of section one draws attention to the mothers' thoughts and feelings regarding separations (real or anticipated) from the infant. 'Maternal Separation Anxiety' is defined and discussed in relation to patterns of child care and consequences for the mother-infant attachment relationship.

### **1.5.1 Separation from the Infant**

Developmental and clinical psychologists have viewed the process of mother-infant separation as central to an understanding of human development, yet little attention has been paid to the mother's interpretation and experience of separation from her baby. This is surprising, particularly as both psychoanalytic and ethological traditions underscore the mother's biological and psychological need for closeness to her infant (McBride and Belsky,

1988).

Benedek (1970) talks about the mother's task of mastering her own separation-related anxiety in order to promote the process of individuation for the child. It is suggested that both too much and too little concern about separation reflect disturbances in the mother's own psychological well-being and that this may interfere with the development of the mother-child relationship.

### **1.5.2 Definition and Background to the Concept of Maternal Separation Anxiety**

Maternal separation anxiety is defined as 'an unpleasant emotional state that may be evinced by expressions of worry, sadness, or guilt' (Hock, Gnezda and McBride, 1983). It is viewed as a complex, multi-dimensional, multi-determined construct with a sound theoretical basis (drawing on the work of early psychoanalytic writers, such as Benedek (1959; 1970) and Levy (1943); together with Bowlby's ethological theory of attachment (Bowlby, 1969)). The concept has received increasing empirical support (Hock et al, 1989).

### **1.5.3 Assessment: The Maternal Separation Anxiety Scale**

The Maternal Separation Anxiety Scale (De Meis, Hock and McBride, 1986) was developed as a measure for the assessment of maternal concerns regarding separation from the infant. It is a 35-item, self-administered questionnaire which aims to assess three independent factors: (1) separation

anxiety (anxiety and guilt resulting from, or in anticipation of, leaving the child); (2) perception of separation effects on the child (attitudes and feelings about the child's ability to adapt and profit from non-maternal child care); and (3) employment-related separation concerns.

#### **1.5.4 Characteristics of Maternal Separation Anxiety**

Maternal separation anxiety (assessed on the MSAS) is viewed as a rather stable personality disposition, elicited in response to a mother's separation (actual or anticipated) from her child. MSAS sub-scale scores have been shown to demonstrate moderate stability over time (see Hock, DeMeis and McBride, 1988; Hock, McBride and Gnezda, 1989; Pitzer, 1984; and McBride and Belsky, 1988). However, it is also thought that characteristics of a situation may serve to heighten or lower levels of separation anxiety. Maternal role preference and employment status may be examples of this and they will be returned to shortly.

#### **1.5.5 Maternal Separation Anxiety and Maternal Behaviour**

Maternal separation anxiety has been associated with maternal behaviour. In one study of mothers and their infants (aged three to four months) those mothers who scored high on general anxiety about separation from their infant (sub-scale 1) were reported (by an independent rater) to have behaved in an anxious and concerned manner following a brief separation from the infant (see McBride, 1983). Similarly, in a study of mothers and infants (aged fifteen to twenty-four months) it was reported that women who expressed

greater anxiety about the effects of separation on their children were less likely to behave in ways to promote autonomy in their infant during a separation-reunion procedure (Berger and Aber, 1986).

### **1.5.6 Maternal Separation Anxiety, Employment Status and Mother-Infant Attachment**

This section begins by looking at maternal role preference and employment status in relation to mothers' responses on the MSAS. Following this, two studies of the relationship between maternal separation anxiety, employment status and security of mother-infant attachment are critically discussed. This leads to the rationale for the current study.

#### **1.5.6.1 Maternal Role Preference and Employment Status**

Research suggests that whether a mother maintains a traditional role (caregiver), or multiple roles (caregiver plus provider) will influence her response on the MSAS. Mothers who plan to return to work after the birth of their infants report less concern about separations due to employment than mothers who do not plan to return to work (McBride and Belsky, 1988; Symons and McLeod, 1994).

In one study, the degree of general separation anxiety was found to change differentially for 'well-educated' mothers who stated their preference to be employed outside the home and those who preferred to remain at home. Whilst anxiety scores declined for both groups over the infants' first year there

was an earlier and significantly greater reduction for those mothers who stated their preference to work. In this study, those mothers who stayed at home during their infant's first year reported significantly higher levels of employment-related separation anxiety (sub-scale 3) than the employed mothers (DeMeis, Hock and McBride, 1986).

It is also likely that the degree of maternal separation anxiety will vary *within* work-status groups according to maternal role preference. The mother who believes that others are just as able to provide care for the infant as she is, who chooses to return to work because it is important to her (for whatever reason) is likely to respond very differently to questions about maternal separation anxiety to the mother who is forced to return to work (perhaps for financial reasons) whilst believing that she and only she is able to provide the right kind of care for the infant. In the latter case, the mother's feelings and beliefs are likely to be in conflict with her work status. Such conflict may subsequently influence her behaviour towards her child (Stifter and Coulehan, 1993). Hock, DeMeis and McBride (1988) found that mother's responses on the MSAS were associated with maternal role preference, independent of maternal employment status.

#### **1.5.6.2 Predicting security of infant attachment**

As we have seen, maternal separation anxiety can be associated with maternal behaviours, and maternal behaviours (sensitivity and responsiveness) consistently emerge as significant variables to be accounted

for in studies of mother-infant attachment. Therefore, it seems likely that a relationship may exist between levels of maternal separation anxiety and patterns of mother-infant attachment. What is more, employment status may serve to heighten or lower levels of maternal separation anxiety (mostly likely, related to maternal role preference and the number of hours of 'maternal separation').

### **1.5.7 Investigating Possible Interactions Between Maternal Separation Anxiety and Employment Status with Links to Mother-Infant Attachment**

Two studies have attempted to investigate possible interactions between maternal separation anxiety and 'employment status', with links to mother-infant attachment.

In the first study, McBride and Belsky (1988) examined the characteristics, determinants and consequences of maternal separation anxiety. Mothers (N=63) were asked to complete the MSAS when their infants were 3 and 9 months old. Half of these women were employed outside of the home (part-time or full-time) for some period of time during the first 9 months of the infants' lives.

#### **(1) *Characteristics of Maternal Separation Anxiety***

Consistent with previous research (see Hock et al, 1983; and Hock, DeMeis and McBride, in press) all three sub-scales of the MSAS were found to demonstrate moderate/strong stability across the two measurement points

(.62, .52, .72,  $p < .001$ ). Assessed as a function of mother's employment status, there was evidence that across each of the three scales, the degree of anxiety that non-working women experienced was somewhat more stable over time than that of the working mothers (respectively .73 vs .55, .60 vs .41, .76 vs .59,  $p < .01$ ).

## **(2) *Determinants of Maternal Separation Anxiety***

Six sets of variables (four maternal and two infant) were examined as potential determinants of individual differences in maternal separation anxiety. Characteristics of the mother, the child, and the mother's employment situation influenced the nature and degree of maternal separation anxiety.

Pre-natal work plans and actual maternal employment status were the most consistent predictors of variation in separation anxiety. Mothers who expressed more sadness, worry or guilt about leaving their infants for brief periods of time (sub-scale 1) were also found to be less educated, lower in self-esteem and more interpersonally sensitive. These mothers planned to stay home rather than be employed, and were more likely to have infants perceived on the Infant Characteristics Questionnaire (ICQ; Bates, Freeland and Loundsbury, 1979) as less 'fussy/difficult', but more 'unadaptable' and 'dull'. These mothers also expressed significantly more concern about the effects of separation on their infants (sub-scale 2) and significantly more anxiety about the effects of employment on their child (sub-scale 3).

### (3) ***Consequences of Maternal Separation Anxiety***

The consequences of maternal separation anxiety were examined in relation to mother-infant attachment security at one year, assessed in the strange situation using the A (insecure-avoidant), B (secure) and C (insecure-resistant/ambivalent) groups. Only one significant difference emerged from the analysis. ***Mothers of secure infants (N=44) expressed the most employment related separation concerns (sub-scale 3).*** As a group, their score on this sub-scale was significantly higher than the combined groups of mothers of insecure infants (N=17). (In terms of the three groups, mothers of insecure-resistant infants expressed the least anxiety, followed by mothers of insecure-avoidant infants, then mothers of secure infants). This finding was true both for women who worked outside of the home and for those who did not. The authors suggest that mothers who are explicitly anxious about balancing work and maternal roles may be more sensitive to their child's needs.

Another finding which emerged from this study (but which did not reach statistical significance) was that ***mothers of secure infants expressed a moderate degree of general separation anxiety (sub-scale 1) which was less than that expressed by mothers of insecure-avoidant infants but more than that expressed by mothers of insecure-resistant infants.*** The fact that mothers of insecure-avoidant infants showed higher amounts of general separation anxiety is contrary to current theory which suggests that these mothers are 'defensive' with respect to negative emotionality and are



inclined to deny problems with or concerns about relationships (Cassidy and Kobak, 1988; Main and Goldwyn, 1984).

In the second study, Stifter and Coulehan (1993) examined the relationship between employment status, maternal separation anxiety and maternal interactive behaviour across a five-month period. They then looked at predictions of mother-infant attachment at 18 months.

As predicted, employed mothers were found to be significantly less anxious about separation than non-employed mothers, particularly in relation to employment. The three sub-scales of the MSAS were found to be correlated with number of hours worked with one significant relation emerging from the analysis - mothers who worked the fewest hours per week reported more concern about the effects of separation on the infant.

Consistent with previous research there was no significant main effect of maternal employment on interactive behaviour (measured at 5 and 10 months). Nor did separation anxiety interact with employment status to affect interactive behaviour in general. However, it was noted that employed mothers who were highly anxious on the third scale of the MSAS (employment related concerns) were more intrusive at 10 months than employed mothers with low anxiety, as well as non-employed low anxious and high anxious mothers. The authors suggest that this may relate to some kind of mismatch between the needs of the working mother and her

perception of her infant's needs.

In terms of predictors of mother-infant attachment at 18 months, the researchers found no significant main effects of employment status, maternal separation anxiety, or maternal interactive behaviour. However, they do state that when the attachment classification was re-grouped into just two categories (secure vs insecure), mothers of insecure infants were found to be less sensitive and more intrusive at 10 months than mothers of secure infants. This difference in reported finding is most likely attributable to the increase in sample size.

Finally, Stifter and her colleagues state that 'confirmatory prediction analysis tests' supported their hypothesis that 'infants of mothers who were employed but who report high employment related separation anxiety would be more likely to develop anxious-avoidant attachments with their mothers'. The authors suggest that these mothers may be trying to 'overcompensate' for their absences and that this makes them somewhat 'overcontrolling'.

#### **1.5.8 Limitations of the two studies**

The first limitation of these studies is their conflicting results. The second is that both sets of researchers claim that variations in maternal separation anxiety (in the context of maternal employment) have consequences for the development of the mother-infant attachment relationship, yet neither study has attempted to examine or control for other factors that could make a

significant contribution to the variance in patterns of attachment. Such factors may include child variables (e.g. gender, birth order, temperament); characteristics of the mother (e.g. maternal education); and characteristics of the family (e.g. socioeconomic status).

Both studies are also limited by their small sample sizes. In particular, the conclusions drawn by Stifter and her colleagues regarding a link between employed mothers who report high employment related separation anxiety and later insecure-avoidant attachments are based on extremely small numbers in some cells (e.g. two low anxiety and one high anxiety, non-employed mother with infants classified as insecure-avoidant).

## 1.6 Rationale for the Present Study

Having reviewed the relevant literature the next section will attempt to condense it into a rationale for the current study.

.

Despite the widely held belief that women with pre-school children should not be employed outside the home (Morgan, 1996) over half the women with children under the age of five are now in full or part-time employment in the UK. This means that frequent, in some cases daily, separations from the infant are an inevitable part of many women's lives. It has also led to an increased use of non-maternal child care arrangements.

A number of studies (mostly published in the 1980s) have suggested that maternal employment (particularly during the infant's first year) may interrupt the development of the mother-infant attachment relationship. These studies typically failed to acknowledge or account for the multitude of factors that may be operating to influence child outcomes. In more recent research a number of characteristics of the child, the mother and the family *in interaction* with child care status have been highlighted as important factors in the development of the mother-infant attachment relationship.

Whilst there has been an increased interest in the processes mediating observed links between infant/mother/family/child care characteristics, very little attention has been paid to the mothers' interpretation and experience of

separation from her infant. Maternal separation anxiety refers to 'an unpleasant emotional state that may be evinced by expressions of worry, sadness, or guilt', and the Maternal Separation Anxiety Scale (MSAS) has been developed as a measure for the assessment of maternal concerns regarding separation (real or anticipated) from the infant.

Research suggests that scores on the MSAS will demonstrate moderate/strong stability across two time points, but that characteristics of a situation may serve to heighten or lower levels of separation anxiety.

Maternal employment (and the consequent use of non-maternal child care arrangements) may be one such example of this. Absolute degrees of anxiety have been found to change differentially for employed and non-employed mothers.

Maternal separation anxiety has been associated with maternal behaviour and patterns of mother-infant interaction. As such, it seems theoretically possible that maternal separation anxiety might interact with employment/child care status (and subsequent hours of 'maternal separation') to either heighten or lower the chances of an insecure mother-infant attachment relationship. In the only two studies to address this issue contradictory findings have been reported. Both studies were also limited by their small samples and a number of methodological weaknesses.

The current study aims to extend research in this area by investigating a relationship between maternal separation anxiety, employment status/hours of non-maternal child care and patterns of mother-infant attachment in the context of other mother, child and family factors. The broad research questions are as follows:-

1. Does employment status affect the stability of scores on the Maternal Separation Anxiety Scale (MSAS)?
2. Do variations in maternal separation anxiety have consequences for a child's attachment status?
3. Does a mother's 'conflicted status' (i.e. working outside the home in the context of high employment related separation anxiety) affect attachment security in the infant?
4. Can secure children be distinguished on the basis of mothers' scores on the MSAS and hours of non-maternal child care?

## **1.7 Hypotheses**

Based on the preceding rationale and research questions, the following hypotheses were investigated.

.

### **1.7.1 Hypothesis 1**

- H1: Levels of anxiety on each sub-scale of the MSAS will demonstrate stable individual differences across two time points (ten and seventeen months).
- HO: Levels of anxiety on each sub-scale of the MSAS will not demonstrate stable individual differences across two time points (ten and seventeen months).

### **1.7.2 Hypothesis 2**

- H1: Absolute degrees of anxiety on each sub-scale of the MSAS will change differentially over time as a function of employment status (two-tailed).
- HO: Absolute degrees of anxiety on each sub-scale of the MSAS will not change differentially over time as a function of employment status.

### **1.7.3 Hypothesis 3**

- H1: Scores on the MSAS will be associated with mother-infant attachment classification (two-tailed).
- HO: Scores on the MSAS will not be associated with mother-infant attachment classification.

#### **1.7.4 Hypothesis 4**

H1: Infants of mothers who are employed but who report high employment related separation anxiety will be more likely to be insecurely attached to their mother than infants of mothers who are employed but do not report high employment related separation anxiety; infants of mothers who are not employed but report high employment related separation anxiety; and infants of mothers who are not employed and do not report high employment related separation anxiety (one-tailed).

HO: Infants of mothers who are employed but who report high employment related separation anxiety will not be more likely to be insecurely attached to their mother than infants of mothers who are employed but do not report high employment related separation anxiety; infants of mothers who are not employed but report high employment related separation anxiety; and infants of mothers who are not employed and do not report high employment related separation anxiety.



### **1.7.5 Hypothesis 5**

H1: Infants who are securely attached to their mothers will be distinguished from infants who are insecurely attached to their mothers on the basis of their mother's scores on the MSAS and hours of non-maternal child care (two-tailed).

HO: Infants who are securely attached to their mothers can not be distinguished from infants who are insecurely attached to their mothers on the basis of their mother's scores on the MSAS and number of hours in non-maternal child care.

## **Section 2**

### ***Method***

## **Section 2: Method**

### **2.1 Design**

This was a prospective study (aiming to predict mother-infant attachment security on the basis of a number of variables, alone or in combination).

### **2.2 Participants**

The participants for this study were 67 mothers and their infants (aged 17 months +/- 2 weeks) enrolled in a large scale prospective study (the Families, Children and Child Care study).

The main study was designed to examine the short and longer-term effects of child care on children's development between birth and the first year at school, and is ongoing.

All families were enrolled in the main study prior to the infant's birth. A copy of the information letter that went out to these families is included in appendix 1.

### **Exclusion criteria**

Mother-infant dyads were excluded from the main study if the mother was known to have a serious medical condition; be HIV positive; a substance abuser; not fluent in spoken English; or under the age of sixteen. Also, if the

infant was born prior to 36 weeks gestation; had a birth weight of less than 2500 grams; required more than 48 hours in the Special Care Baby Unit; or was born with major congenital abnormalities.

No additional exclusion criteria were applied for the purposes of the current study.

## **2.3 Measures**

Data for this study were collected at three time points: (1) infant aged three months; (2) infant aged ten months; and (3) infant aged seventeen months.

### **2.3.1 Demographic Information**

Basic demographic information was collected during an interview with the mother when the baby was aged 3 months. Information included: infant characteristics (gender and birth order); maternal characteristics (marital status, ethnicity, educational status and socio-economic classification); and family characteristics (family size and composition).

### **2.3.2 Employment and Child Care Arrangements**

Employment plans and plans to use any form of non-maternal child care arrangement, other than paternal care, (e.g. grandparent, friend, childminder, nanny, child care centre/nursery/crèche or combination) were also recorded during the three month interview.

The age of the infant when the mother began employment outside of the home was recorded along with the age at which the infant was enrolled in non-maternal child care. Changes in employment and/or child care arrangements were recorded during follow-up interviews when the infants reached ten and seventeen months.

### **2.3.3 Socio-Economic Classification (SEC)**

In this study the system used to code socio-economic class is the new SEC, proposed by the Economic and Social Research Council (ESRC) and the Office for National Statistics (ONS, 1998). The full version of the SEC offers 14 classes but 9, 8, 5 or 3 class models can also be generated. A brief summary of this system is presented in appendix 2.

### **2.3.4 Infant temperament**

Ten months after the infant's birth, mothers completed the Infant Characteristics Questionnaire (ICQ; Bates, Freeland and Loundsbury, 1979). The ICQ (appendix 3) was developed primarily to assess the construct of 'difficult' temperament, prompted by the work of Thomas, Chess and Birch (1968).

There are separate forms of this measure for infants aged approximately 6, 13 and 24 months. The 13 month ICQ contains 32 items, scored on a scale of 1 to 7. Factor analytic studies identified 20 of these items as discriminating in a four factor solution (Bates, Freeland and Loundsbury, 1979) These 20 items

were collected in the main study and scores were calculated for each of the four subscales of the ICQ: *fussy/difficult*; *unadaptable*, *persistent* and *unsociable*.

The **fussy/difficult** scale is concerned with 'fussiness' of the infant and 'soothability'. Examples from this scale include "How much does your baby cry and fuss in general?" and "How changeable is your baby's mood?"

The **unadaptable** subscale contains items regarding infants' initial and eventual reactions to new events, people and things. Examples include "How does your baby typically respond to new foods?" and "How does your baby typically respond to a new person?"

The **persistent** subscale contains items regarding the infant's persistence and reaction when told to stop doing something. Examples include "Does your baby persist in playing with objects when s/he is told to leave them alone?" and "When removed from something he/she is interested in but should not be getting into, how often does your baby get upset?"

The **unsociable** subscale examines the sociability of the infant. Examples include "How much does your baby enjoy playing games with you?" and "How much does your baby cuddle and snuggle when held?"

Bates et al (1979) report moderate reliability for the ICQ over time and

convergence with the Survey of Temperamental Characteristics (Carey, 1973), with father report on the ICQ and to a lower degree, with home data collected by independent observers.

### **2.3.5 Maternal Sensitivity**

The Caregiver Interaction Scale (Arnett, 1989) is a global rating system designed to produce information related to various socialisation practices identified in research on parenting (Macoby and Martin, 1983). Items were developed during pilot observations in Head Start Centres in the United States, and tested until a criterion level of 80% agreement was established between three observers. Factor analysis revealed four independent factors, subsequently labelled *Positive Interaction*, *Punitiveness*, *Permissiveness* and *Detachment*. Items on each factor had a minimum loading of .49.

The CIS has 26 items scored 1 to 4. It was originally devised for use with children in nursery group settings therefore a number of adaptations had to be made to make the scale appropriate for use with 10 month old infants, observed in their own homes. For example, 'baby' replaced 'children'. Following the piloting of this measure in the main study, eight inappropriate items were dropped and only three of the four subscales were used (the 'Permissiveness' subscale was dropped because items relating to control and discipline which were not relevant for infants at ten months). See appendix 4 for adaptations to the original measure and the rating system used in the current study.

Over a period of 1 to 1.5 hours an observer rated the mother on a 4-point scale, according to the question "To what extent are each of the following statements characteristic of this mother?" 1 = not at all to 4 = very much.

The **Positive Interaction** subscale contains items concerning the warmth of the mother's interaction with her infant, her level of enthusiasm and the developmental appropriateness of her communication. Examples include 'Speaks warmly to the baby' and 'Seems to enjoy the baby'.

The **Punitiveness** subscale rates the mother on hostile, threatening and critical behaviour directed towards the infant. Examples include 'Seems critical of the baby' and 'Speaks with irritation or hostility to the baby'.

The **Detachment** subscale rates the extent to which the mother seems uninvolved and disinterested in her infant. Examples include 'Seems distant or detached from the baby' and 'Spends considerable time in activity not involving interaction with the baby'.

A high score on the first sub-scale (Positive Interaction) and low scores on sub-scales 2 (Punitiveness) and 3 (Detachment) are indicative of sensitive caregiver interaction.



Reliability and validity for this instrument was not available in the published literature.

### **2.3.6 Maternal Separation Anxiety**

Mothers completed the Maternal Separation Anxiety Scale (MSAS) developed by Hock, Gnezda and McBride (1983) when the infant was aged 10 months (for the main study) and again at 17 months (for the current study).

The MSAS (appendix 5) is a 35-item, self-administered questionnaire. Each item is measured on a five-point Likert scale, ranging from strongly agree to strongly disagree (eleven items are reversed). A high score reflects high anxiety. Factor analysis identified three independent factors describing unique components of maternal separation anxiety (see Hock et al, 1989). Factor loadings are not reported, however, the authors do state that the low magnitude of the coefficients in the interfactor correlation matrix revealed that the factors were independent. On the basis of this finding, scores on the MSAS are calculated for three separate subscales:

#### ***Subscale 1: Maternal separation anxiety***

This scale consists of 21 items which are said to represent a mother's level of worry, sadness and guilt when separated from her infant; beliefs about the importance of exclusive maternal care (e.g. that a mother is best able to care for her child); beliefs that her child prefers her care and is better off in her care; and concerns about her child's abilities to adapt to non-maternal care.

Examples of items in this subscale include “I don’t enjoy myself when I am away from my child” and “Only a mother just naturally knows how to comfort a distressed child”. Scores on this factor range from 7 to 35. Higher scores represent more worry, sadness and guilt and stronger beliefs about the value of exclusive maternal care.

### ***Subscale 2: Perception of separation effects on the child***

This subscale comprises seven items, which represent the mother’s perceptions of her child’s reaction to separation and the positive/negative effects of separation. It involves maternal beliefs that mother-child separation contributes to the child’s social development by helping the child develop interpersonal skills and autonomy. Examples of items from this scale are “Exposure to many different people is good for my child” and “My child needs to spend time away from me in order to develop a sense of being an individual in his/her own right”. Scores on this factor range from 7 to 35. Higher scores suggest that the mother believes her child is not comfortable with separation and will not benefit from separation experiences.

### ***Subscale 3: Employment-related separation concerns***

This subscale is made up of seven items. It assesses a mother’s feelings about balancing her maternal role and employment outside of the home. It examines the importance and amount of interest that a mother expresses in either a career, job, or occupation for herself and her role as a mother. Examples taken from this subscale include “I would resent my job if it meant I

had to be away from my child" and "I would not regret postponing my career in order to stay home with my child". Scores on this factor range from 7 to 35. A high score suggests that the mother is highly concerned about leaving her child in order to work outside of the home.

### ***Internal consistency***

Hock et al (1989) report internal consistency for the MSAS (using Cronbach's alpha) as .90 for subscale 1, .71 for subscale 2, .79 for subscale 3 and .88 for the total 35-item MSAS. These coefficients were of similar magnitude when the measure was re-administered three months later. In addition, confirmatory factor analysis showed that the pattern of items forming the three factors remained constant over time.

### ***Stability over time***

In the same paper, Hock and her colleagues examine test-retest stability by correlating the Time 1 (birth) and Time 2 (infant aged three months) responses of the subject. Stability coefficients for the summed items of subscales 1, 2, and 3, and the total were .73, .58, .72 and .75 respectively. In a previous study, Hock et al (1988) followed a group of 130 mothers, noting that correlation coefficients of scores measured when the infants were aged 7 weeks and 14 months were .67, .52, .62 for subscales 1, 2 and 3 respectively. McBride and Belsky (1988) who administered the MSAS to 63 mothers at 3 and 9 months infant age quote similar figures (.62, .52 and .72).

### **Concurrent Validity**

Concurrent validity has only been reported for sub-scale 1 of the MSAS. A strong positive relationship between the first sub-scale of the MSAS and an interview rating of maternal separation anxiety ( $r=.79$ ,  $p<.001$ ); and a strong positive relationship with a maternal self-report of anxiety during an actual separation of mother from baby in the laboratory ( $r=.77$ ,  $p<.001$ ) have been reported (see McBride, 1983).

### **2.3.7 Mother-Infant Attachment**

The Strange Situation was developed by Ainsworth and her colleagues to elicit and measure infants' attachment behaviour (Ainsworth et al, 1978). It is a 25 minute procedure containing brief episodes of increasing stress for the infant, including two mother-infant separations and reunions.

The Strange Situation has well-established reliability and validity as a measure of mother-infant attachment during infancy. It has recently been established as a valid measure of attachment status for infants with extensive child care experience (NICHD, 1997).

Attachment behaviours may be categorised as secure (B) or insecure (A = insecure-avoidant, C = insecure-resistant, D = disorganised, or U = unclassifiable) (Main and Solomon, 1990). In this study a decision was made not to rate 'D behaviours' as this category is a more recent addition to Ainsworth's original three-group classification and there is still controversy

surrounding its usefulness. It currently requires separate training and inter-rater reliability is difficult to establish.

The Strange Situation was administered according to standard procedures (see Ainsworth et al, 1978) by the researcher. In order to ensure that assessments were of a high quality, the researcher was trained (to assess and rate attachment behaviours) by an accredited rater. All of the Strange Situations were videotaped and coded by the researcher prior to any knowledge of family or child care characteristics. A brief description of the behaviours necessary for each classification is presented in appendix 6.

Twenty-five per cent of the cases in this study were double-coded by the same person who had provided training. Three cases were identified where coders were inconsistent. Video tapes of these three cases were reviewed and discussed. This led to identification of a misunderstanding on the part of the researcher regarding the inclusion of avoidant behaviours occurring after an initial greeting. All tapes were reviewed by the researcher and in three cases where avoidant behaviours had occurred after an initial greeting a change in ratings led to a change of category. These three tapes were sent to the second rater without explanation. The second coder's ratings for these three tapes were consistent with the researcher's.

Agreement for the three category system prior to discussion was 83%.

Agreement for the three category system was 100% following discussion and

re-training. The distribution of the infants into the three attachment groups, insecure-avoidant (21%), secure (67%) and insecure-resistant (11%) is consistent with previous studies of similar samples.

## **2.4 Procedure**

The first 100 mothers enrolled in the main study were sent a letter outlining the current study (appendix 7). Approximately two weeks later the researcher contacted them by telephone to explain the study in more detail and to deal with any queries or concerns. Those who agreed to take part were booked in for the Strange Situation assessment at a time when the infant would be aged seventeen months (+/- two weeks). A letter of confirmation (appendix 8) and the Maternal Separation Anxiety Scale followed.

All of the mother-infant pairs were assessed in the same hospital setting, according to the same standardised procedure. An abbreviated version of the procedure is presented in appendix 9. Mothers and their infants were greeted by the researcher and enough time was allowed for further discussion of the study. Those who were happy to proceed (all were) signed a consent form and the procedure was described to them in detail.

It was emphasised that babies of this age often cry when their mother leaves the room but that if the mother felt that her baby was getting too upset she should let the researcher know. Mothers were also given a prompt sheet to refer to, which they kept with them throughout the procedure (see appendix

10). All of the strange situations were recorded on video, to be coded at a later date.

## **2.5 Ethical Approval**

Full ethical approval had already been granted for the main study. A separate proposal for the current study was submitted to the Oxfordshire Psychiatric Research Ethics Committee in July 1999; ethical approval was granted in August 1999 (see appendix 11).

## **Section 3**

# ***Results***



## Section 3: Results

### 3.1 Response Rate and Sample Size

Letters<sup>1</sup> were sent to the first 100 women participating in the main study.

Sixty-seven mothers agreed to take part.

### 3.2 Demographic Data

#### 3.2.1 Infant characteristics

##### **Age**

All of the infants were aged seventeen months (+/- 2 weeks) at the time of the Strange Situation assessment.

##### **Gender**

Forty-one (62%) girls and 26 (39%) boys took part.

##### **Birth Order**

- First born = 21 (31%)
- Second = 32 (48%)
- Third = 10 (15%)
- Fourth = 4 (5%)
- Fifth = 1 (1%)

### **3.2.2 Family Characteristics**

#### ***Marital status***

Almost all (95%) of the mothers who agreed to take part were either married or cohabiting. Two were divorced and one was single.

#### ***Family size***

Family size ranged from 2 to 7. Most families (75%) were composed of mother and father plus one or two children.

### **3.2.3 Maternal Characteristics**

#### ***Socio-Economic Classification***

For the completeness of data socio-economic class categorisations were made on the basis of the mother's most recent occupation. There was a strong positive correlation between mother's and father's socio-economic status. Adopting the ESRC three class model of socio-economic status, approximately half of the sample (N=34) were in class I (managerial and professional); 29% (N=19) were in class II (intermediate); and the remaining 21% (N=14) were in class III (working class).

### ***Educational status***

Maternal educational levels ranged from no qualifications (formal or informal) to post-graduate level.

Three mothers (4%) had no qualifications (formal or informal). Two (3%) had a vocational qualification (e.g. NVQ(I), YTS). Thirteen (19%) had an academic qualification (e.g. GCSE or O-levels). Twelve (18%) had a higher vocational qualification (e.g. BTEC, City and Guilds, NVQ(II) or NVQ(III)). Nine (13%) had a higher academic qualification (e.g. A-Levels, GNVQ Advanced). Twenty-eight mothers were educated to degree level or beyond.

### ***Ethnicity***

One mother described herself as 'Mixed' ethnicity, all others described themselves as 'White'.

## **3.2.4 Employment and Child Care Characteristics**

### ***Employment Plans***

At three months, mothers were asked to indicate their employment plans.

Thirty-nine mothers (58%) planned to return to work at some point during the infant's first year. Three mothers (5%) planned employment when their child started school (4/5 years). The remaining twenty-five (37%) had no plans for employment when asked at three months.

***Employment status***

By seventeen months 49 mothers (73%) were working outside the home (full or part-time). This figure incorporates all of the mothers who indicated at three months that they had made plans to return to work during the infant's first year, plus an additional ten mothers who did not have employment plans at three months.

Infant age when the mother returned to work ranged from one week to sixteen months (mean=22 weeks, SD=14.7).

***Plans to Use Child Care***

At three months mothers were also asked to indicate the age at which they planned to use non-parental child care.

Forty-four (66%) mothers planned to use non-parental child care during the infant's first year. This figure includes 36 of the mothers who had made plans to return to work during the infant's first year, plus an additional 8 mothers who had no employment plans at three months.

A further four mothers (6%) planned to use non-parental child care during the infant's second year, and five mothers (7%) planned to use child care during the infant's third or fourth year. Fourteen mothers (21%) had no plans to use any form of non-parental, pre-school child care.

At ten and seventeen months, information regarding the type, amount and stability of child care was collected.

### ***Type of Child Care***

Approximately half of the sample (N=35) were not enrolled in any form of non-parental child care arrangement throughout the first seventeen months. The following care arrangements applied to those (N=32) who were:-

- Nanny (daily) = 1 case (3.1%)
- Friend = 3 cases (9.4%)
- Grandparent = 4 cases (12.5%)
- Childminder = 8 cases (25%)
- Child care centre/nursery/creche = 8 cases (25%)
- Combination of child care = 8 cases (25%)

N.B. For the purpose of data analysis 'nanny', 'friend' and 'grandparent' were grouped together under a single category, referred to as 'informal/home-based care'.

### ***Amount of Child Care***

For these thirty-two infants, hours per week in non-parental child care ranged from 8 to 42 (mean=23.3, SD=9.6) and cumulative number of months in non-parental child care ranged from 1 to 15 (mean=11.4, SD=4).

'Total hours maternal separation' was calculated for these infants by multiplying the number of hours per week by the number of weeks of child care experienced between 0 and 17 months. Total hours of maternal separation ranged from 12 to 595 hours (mean=287.7, SD=166.5).

### ***Stability of Child Care***

By seventeen months, the majority of those infants using child care (66%) had experienced one non-parental child care arrangement; eight (25%) had experienced two different child care arrangements (i.e. had changed child care once); and three (9.4%) had experienced three child care 'starts'.

## **3.3 Investigation of Hypotheses**

### **3.3.1 Methods of Analysis**

Data were analysed using the SPSS for Windows package. The analysis was carried out in two stages. In **stage one** maternal separation anxiety was examined in relation to all other linear variables. In **stage two**, hypotheses one to five were investigated.

### **3.3.2 Stage One: Relationships Between Variables**

Correlational analyses were carried out to investigate a relationship between maternal separation anxiety (sub-scales 1-3) and all other linear variables at ten and seventeen months. Where scores were normally distributed and of equal variance the Pearson's Product Moment Correlation test was used.

Where this was not the case, the non-parametric equivalent of this test (Spearman's Rho) was performed (see tables 1 and 2 in appendix 12 for Kolmogorov-Smirnov Z values and Levene's statistics).

A number of variables were found to be significantly correlated with levels of maternal separation anxiety (see table 3, appendix 13 for correlation coefficients and significance levels). These variables included: (1) the age of the infant when the mother planned to use non-parental child care (asked at three months); (2) infant temperament (sub-scales 1-4); (3) maternal sensitivity (sub-scales 1-3); and (4) 'total maternal separation' (average hours non-parental child care per week multiplied by total number of months).

### **1. *Maternal separation anxiety and plans to use child care***

The age of the infant when the mother planned to use non-parental child care and the age of the infant when the mother planned to work outside the home was significantly positively correlated ( $r=.422, p<.01$ ). A decision was made to correlate the age of the infant when the mother planned to use child care, rather than the age of the infant when the mother planned to work, with MSAS scores. This would allow the analysis to be conducted on the total sample (a score of 60 was entered for those women ( $n=14$ ) who had no plans to use child care as this is the approximate age when most children start school) rather than just those who had employment plans.

The age of the infant when the mother planned to use non-parental child care was positively correlated with scores on the first (general separation anxiety) and third (employment related separation concerns) sub-scale of the MSAS at ten months ( $r=.43$ ,  $p<.001$  and  $r=.46$ ,  $p<.001$  respectively). This suggests that mothers who were more anxious about separation (general and employment related) at ten months had planned (at three months) to use non-parental child care later than mothers who were less anxious.

## **2. Maternal separation anxiety and infant temperament**

Three out of the four sub-scales of the Infant Characteristics Questionnaire (ICQ) were correlated with maternal separation anxiety. The first sub-scale ('fussy, difficult, demanding') was positively correlated with ten and seventeen month 'general separation anxiety' ( $r=.3$ ,  $p<.05$ ,  $r=.3$ ,  $p<.05$  respectively) and negatively correlated ( $r=-.3$ ,  $p<.05$ ) with seventeen month 'employment related separation concerns'.

The second sub-scale ('unadaptable') was not significantly correlated with maternal separation anxiety on any sub-scale, at either time point. The third sub-scale ('persistent') was positively correlated with seventeen month 'general separation anxiety' ( $r=.32$ ,  $p<.001$ ) and 'perception of separation effects' ( $r=.28$ ,  $p<.001$ ). The fourth sub-scale ('unsociable') was negatively correlated ( $r=-.32$ ,  $p<.001$ ) with 'employment related separation concerns' at ten months.



### **3. *Maternal separation anxiety and maternal sensitivity***

Scores on the Caregiver Interaction Scale (CIS) correlated with scores on the MSAS. Ten month 'perception of separation effects' was positively correlated ( $r=.26, p<.05$ ) with the third sub-scale of the CIS (detachment) at ten months.

Seventeen month 'general separation anxiety' was positively correlated ( $r=.26, p<.26$ ) with the second sub-scale of the CIS ('punitiveness').

Seventeen month 'employment related separation concerns' was negatively correlated ( $r=-.25, p<.05$ ) with the third sub-scale (detachment) of the CIS.

### **4. *Maternal separation anxiety and total hours of maternal separation***

Total hours of maternal separation was negatively correlated with ten month 'general separation anxiety' ( $r=-.43, p<.001$ ) and ten and seventeen month 'employment related separation concerns' ( $r=-.57, p<.001, r=-.30, p<.05$  respectively).

#### **3.3.3 STAGE 2: Investigating hypotheses one to five**

##### **3.3.3.1 Hypothesis 1**

Hypothesis 1: ***Levels of anxiety on each sub-scale of the MSAS will demonstrate stable individual differences across two time points (ten and seventeen months).***

With parametric data requirements met, the Pearson's Product Moment

Correlation was used to investigate the stability of individual differences in maternal separation anxiety. Scores on each of the three sub-scales of the MSAS were correlated with their corresponding scores across the two measurement points (ten and seventeen months).

The highly reliable stability coefficients that emerged (see table 1 below) indicate that, in general, those women who were most likely to be anxious when their infants were ten months old were also most likely to be anxious seven months later. Hypothesis 1 can therefore be accepted.

**Table 1: Correlation coefficients for each sub-scale of the Maternal Separation Anxiety Scale (MSAS) at ten and seventeen months**

MSAS Sub-Scale	Pearson's Product Moment Correlation Coefficient		
	Total Sample (N=67)	Working in First Twelve Months (N=49)	Not Working in First Twelve Months (N=18)
Maternal Separation Anxiety (sub-scale 1) at ten and seventeen months	.79**	.81**	.76**
Perception of Separation Effects (sub-scale 2) at ten and seventeen months	.53**	.47**	.61**
Employment Related Separation Concerns (sub-scale 3) at ten and seventeen months	.72**	.78**	.51*

\*. Correlation is significant at the 0.05 level (2-tailed)

\*\*. Correlation is significant at the 0.01 level (2-tailed)

### 3.3.3.2 Hypothesis 2

Hypothesis 2: ***Absolute degrees of anxiety on each sub-scale of the MSAS will change differentially over time as a function of employment status.***

Pearson's Product Moment correlational analysis was repeated taking each group separately i.e. working within the first seventeen months/not working within the first seventeen months. Whilst stability was pronounced for both groups, the size of the correlation coefficients (see table 1) suggests that levels of general separation anxiety (sub-scale 1) and employment related separation concerns (sub-scale 2) were more stable for those women who were working outside the home within the first seventeen months. On the second sub-scale (perception of separation effects) however, scores were more stable for the group of women who were not working within the first seventeen months.

In order to assess change in mothers' feelings about separation from their infants over time and as a function of employment status, data obtained at ten and seventeen months were subjected to a 2 (time) x 2 (maternal employment status) multivariate analysis of variance (MANOVA). Each sub-scale was considered separately.

### **1. Maternal Separation Anxiety (sub-scale 1)**

This first scale assesses maternal worry, sadness and guilt related to brief separations from the infant. There was a significant effect of time ( $F(1,65) = 8.8, p < .05$ ) and employment status ( $F(1,65) = 5.4, p < .05$ ) on maternal separation anxiety scores. The interaction of time and employment status was also significant ( $F(1,65) = 5.7, p < .05$ ).

Inspection of the means (see table 2 below) revealed that mothers who were not working were more anxious on this sub-scale at both ten and seventeen months than mothers who worked during the first seventeen months (21.5 vs 18.6 and 19.8 vs 18.3 respectively). Whilst separation anxiety decreased for both groups over time, there was a greater reduction in anxiety for those women who were not employed.

### **2. Perception of Separation Effects (sub-scale 2)**

This scale is concerned with maternal beliefs about the positive/negative effects of separation on the infant. A main effect of time in the case of this sub-scale ( $F(1,65) = 5.03, p < .05$ ) resulted from the decline in maternal concerns about the negative effects of separation on the infant over time. For the group who worked outside the home, the mean score dropped from 17 to 16.3 and for the group who did not work outside the home, the mean score dropped from 18.3 to 16.3 (see table 2). There was no significant effect of employment status and no significant interaction between employment status and time for scores on this scale.

3. *Employment related separation concerns (sub-scale 3)*

This scale assesses a mother’s attitude about balancing her maternal role and employment outside the home. There was a significant effect of time ( $F(1,65) = 5.6, p<.05$ ) and employment status ( $F(1,65) = 8.6, p<.05$ ) on mothers’ scores on this scale. There was no significant interaction between the two variables, although there is a clear trend (again in the direction of a greater reduction in anxiety over time for the women who were not employed). Inspection of the means (see table 2) revealed that scores declined for both groups over time and that those who were not employed were more anxious about leaving the infant in order to work outside the home than those who were employed, at both time points.

**Table 2: Mean scores for each sub-scale of the Maternal Separation Anxiety Scale (MSAS) at ten and seventeen months for employed and non-employed mothers**

	Mean Maternal Separation Anxiety Score (sub-scale 1)		Mean Perception of Separation Effects Score (sub-scale 2)		Mean Employment Related Separation Concerns Score (sub-scale 3)	
	10 months	17 months	10 months	17 months	10 months	17 months
Working in first 17 months (n=49)	18.6	18.4	17	16.3	25.6	25.2
Not working in first seventeen months (n=18)	21.5	19.8	18.3	16.3	29.6	27.8

Hypothesis 2 is partially supported - specifically for the first sub-scale of the MSAS on which non-employed mother's separation anxiety showed a significantly greater decline than it did for the employed mothers. It should be noted that the non-significant trend observed on sub-scale 3 is also in this direction.

### **3.3.3.3 Hypothesis 3**

Hypothesis 3: ***Scores on the Maternal Separation Anxiety Scale will be associated with mother-infant attachment classification.***

In order to investigate this hypothesis it was necessary to construct a dependent variable from the attachment classification categories. As the numbers in each of the insecure categories were small (particularly the insecure-resistant category), it was decided that the analysis would be based on the secure/insecure dichotomy.

Logistic regression allows prediction of a discrete outcome from a set of variables that may be continuous, discrete, dichotomous or a mixture of each. Predictor variables do not have to be normally distributed, linearly related or of equal variance within each group. It estimates the probability of a particular outcome for each case. The simplest (and worst fitting) model includes only the constant and no predictor variables. The 'best fitting' model includes the constant, all predictors and possibly interactions. The researcher uses 'goodness of fit' tests to choose the model that does the best job of prediction with the fewest predictors.

A logistic regression analysis was performed on attachment status (with secure = 1 and insecure = 2) as the outcome. A number of predictor variables (table 3) were entered in **Block 1**. The method of entry was **Forward: LR**.

**Table 3: Predictor variables**

1. **Infant characteristics:** gender, birth order and temperament (four sub-scales).
2. **Maternal characteristics:** socioeconomic status, educational status, maternal sensitivity (three sub-scales) and maternal separation anxiety (three sub-scales).
3. **Employment characteristics:** employment plans and employment status.
4. **Child care characteristics:** child care plans, age at which infant enrolled in non-parental child care, type of child care, number of child care starts, number of months of non-parental child care, average hours per week in non-parental child care, and 'total maternal separation' (i.e. total number of hours in non-parental child care).

A test of the full model with all predictors measured against a constant-only model was statistically reliable for just one variable, the 'Unadaptable' sub-scale (sub-scale 2) of the Infant Characteristics Questionnaire (Chi squared = 4.2 (df =1, N=67),  $p < .05$ ). This suggests that the 'Unadaptable' sub-scale

reliably distinguished between secure and insecure infants. However, prediction success was unimpressive. Whilst 95.6% of the secure infants were successfully predicted, only 19% of the insecure infants were correctly predicted. This gave an overall success rate of 71.6%. No other findings were statistically significant.

Table 4 shows the regression coefficient, Wald statistic and odds ratio calculated in this analysis. An odds ratio of 1.15 shows little change in the likelihood of being insecurely attached on the basis of a one unit change in 'unadaptable temperament'.

Hypothesis 3 cannot be accepted.

**Table 4: Results of logistic regression**

Variable	B	Wald test (Z-ratio)	Odds Ratio
'Unadaptable temperament' (sub-scale 2 of the ICQ)	.14	3.87	1.15



### **3.3.3.4 Hypotheses 4 and 5**

Hypothesis 4: *Infants of mothers who are employed but who report high employment related separation anxiety will be more likely to be insecurely attached to their mother than infants of mothers who are employed but do not report high employment related separation anxiety; infants of mothers who are not employed but report high employment related separation anxiety; and infants of mothers who are not employed and do not report high employment related separation anxiety.*

Hypothesis 5: *Infants who are securely attached to their mothers will be distinguished from infants who are insecurely attached to their mothers on the basis of their mother's scores on the MSAS and hours of non-maternal child care.*

Each sub-scale of the MSAS was examined in interaction with each of the predictor variables listed above. Interactions were entered in **Block 2** of the logistic regression using the same (Forward:LR) method of entry. No interactions were statistically reliable. Hypothesis 4 and 5 cannot be accepted.

### **3.4 Exploring trends in the data**

Ideally, the analysis would have been run with the three original categories of attachment, however, the low number of insecure-resistant infants (N=7) in this sample precluded this. By grouping the two insecure (insecure-avoidant and insecure-resistant) categories together it was possible that interesting differences between the two groups were masked. It was therefore decided to examine all linear variables in relation to attachment status using the three-class model. These variables are listed in table 5 below:-

**Table 5: Linear variables examined for trends****1. Child care and employment characteristics**

- Age of infant when mother plans to use child care
- Age of infant when mother plans to work outside the home
- Age of infant when mother starts/returns to work outside the home
- Total hours non-maternal child care ('maternal separation')

**2. Maternal Separation Anxiety**

- General Maternal Separation Anxiety (sub-scale 1) at ten and seventeen months
- Perception of Separation Effects (sub-scale 2) at ten and seventeen months
- Employment Related Separation Concerns (sub-scale 3) at ten and seventeen months

**3. Infant Temperament**

- Fussy, Difficult, Demanding (sub-scale 1)
- Unadaptable (sub-scale 2)
- Persistent (sub-scale 3)
- Unsociable (sub-scale 4)

**4. Maternal Sensitivity**

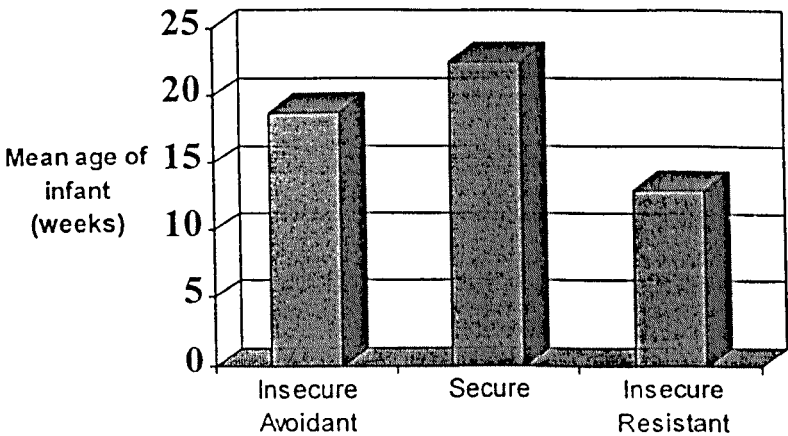
- Positive Relationship (sub-scale 1)
- Punitiveness (sub-scale 2)
- Detachment (sub-scale 3)

None of the results were statistically significant, however, small differences in mean scores between the three groups were apparent on a number of variables. Results are described with the use of bar charts (figures 1 to 14) for illustrative purposes.

3.4.1 Age of the infant when mother plans to use child care

Mean infant ages (in weeks) when mothers planned to use child care were as follows: 18.8 for the insecure-avoidant group, 22.6 for the secure group; and 13 for the insecure-resistant group. This suggests that, as a group, the mothers of secure infants were planning to use some form of non-maternal child care arrangement when the infant was slightly older than the infants in the other two groups. Mothers of insecure-resistant infants planned child care the earliest (see figure 1). Differences between the three groups were not statistically significant ( $F(2,64) = .62$ , NS).

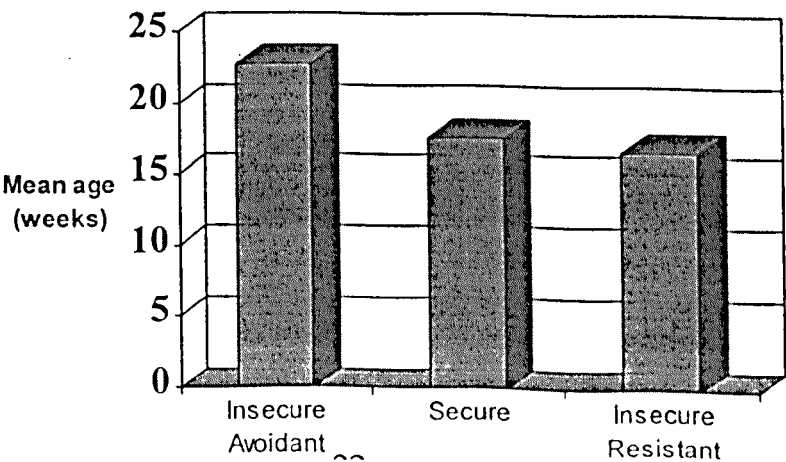
**Figure 1: Infant age (mean weeks) when mother plans to use child care (N=67)**



**3.4.2 Age of the infant when mother plans to start work/return to work outside the home (for those (n=42) who had employment plans at three months)**

Mean infant ages (in weeks) when mothers planned to start work/return to work outside the home (for the 42 women who had employment plans at three months) were as follows: 22.8 for the insecure-avoidant group (N=10), 17.6 for the secure group (N=26); and 16.7 for the insecure-resistant group (N=6). This suggests that as a group, the mothers of insecure-avoidant infants were planning to work outside the home at a point when the infant was slightly older than the infants in the other two groups. Mothers of insecure-resistant infants planned work the earliest (see figure 2). Differences between the three groups were not statistically significant ( $F(2,39) = .89, NS$ ).

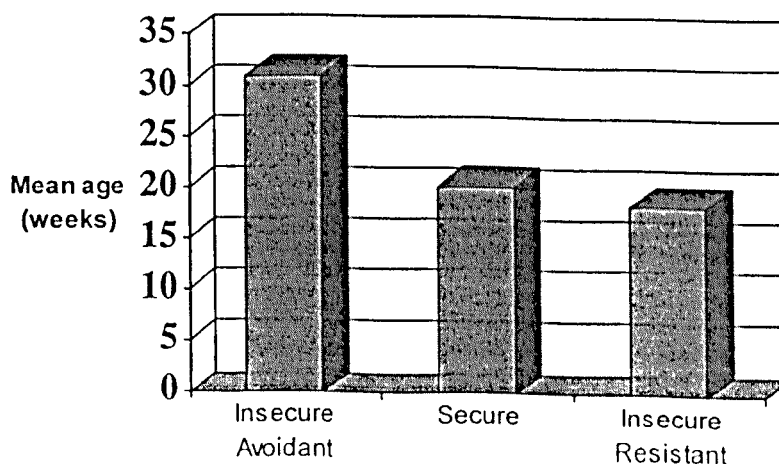
**Figure 2: Mean age of infant (weeks) when mother plans to start work/return to work outside the home for those mothers who had employment plans at three months (N=42)**



### 3.4.3 Age of the infant when the mother begins work outside the home (for those ( $n=49$ ) women who were employed in the first seventeen months)

Mean infant age (in weeks) when the mother began work outside the home (for those 49 mothers who were working in the first seventeen months) was as follows: 31 for the insecure-avoidant group ( $N=11$ ); 20.2 for the secure group ( $N=32$ ); and 18.5 for the insecure-resistant group ( $N=6$ ). This suggests that as a group, the mothers of insecure-avoidant infants began work outside the home when the infant was slightly older than the infants in the other two groups. Mothers of insecure-resistant infants began/returned to work the earliest (see figure 3). Differences between the three groups were not statistically significant ( $F(2,46) = 2.58$ , NS).

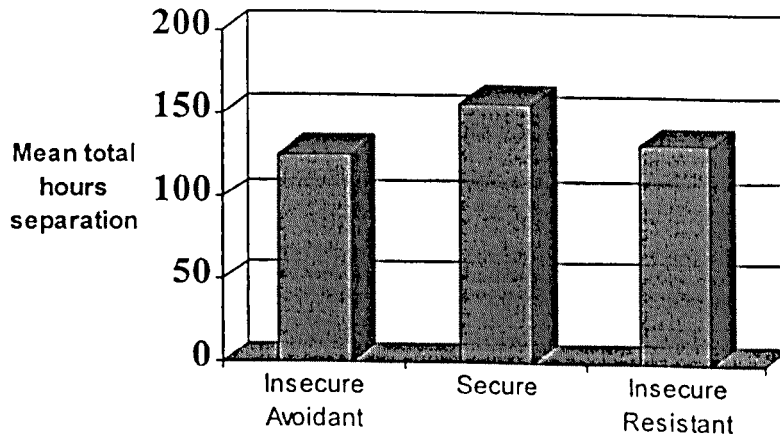
**Figure 3: Mean infant age (weeks) when mother begins work outside the home for those women ( $n=49$ ) who were employed in the first 17 months**



### 3.4.4 Hours of separation

Mean 'total hours separation' were as follows: 126.1 for the insecure-avoidant group; 156.3 for the secure group; and 131.4 for the insecure-resistant group. This suggests that as a group, secure infants had experienced more maternal separation than the other two groups. Insecure-avoidant infants experienced the lowest amounts of separation (see figure 4). Differences between the three groups were not statistically significant ( $F(2,64) = .164$ , NS).

**Figure 4: Mean total hours maternal separation (N=67)**

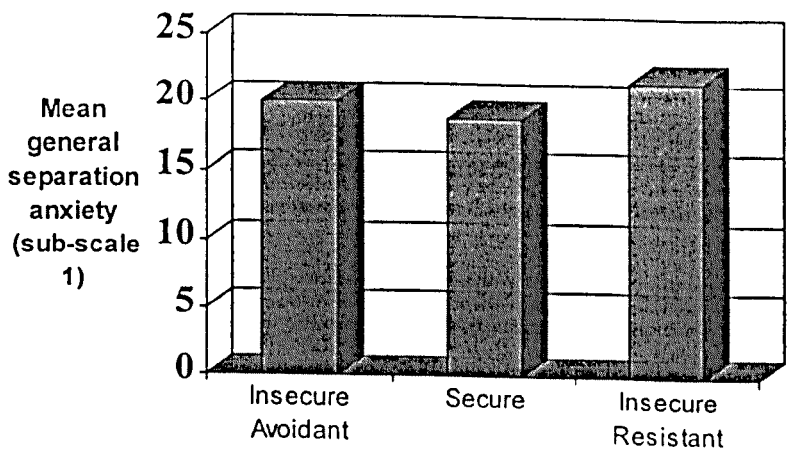




**3.4.5. Ten month general maternal separation anxiety (sub-scale 1 of the MSAS)**

Mean scores on the first sub-scale of the MSAS were as follows: 20 for the insecure-avoidant group; 18.8 for the secure group; and 21.5 for the insecure-resistant group. This suggests that, as a group, the mothers of secure infants expressed the least anxiety on this scale (see figure 5). Differences between the three groups were not statistically significant ( $F(2,64) = 2$ , NS).

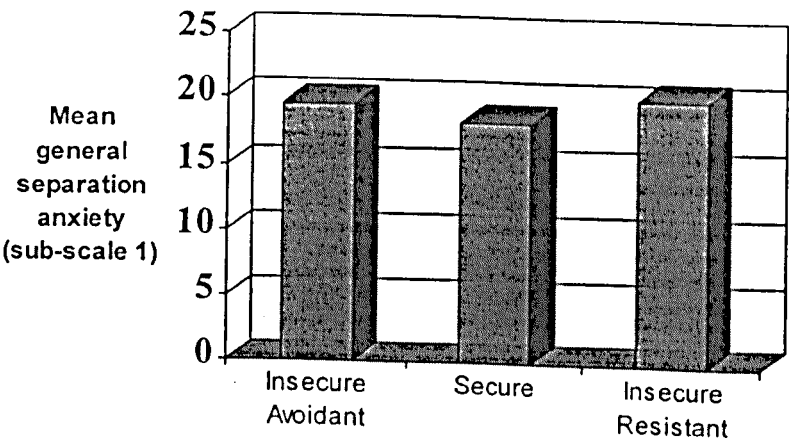
**Figure 5: Ten month general maternal separation anxiety (N=67)**



**3.4.6 Seventeen month general separation anxiety (sub-scale 1 of the MSAS)**

Mean scores on this sub-scale at seventeen months were as follows: 19.6 for the insecure-avoidant group; 18.3 for the secure group; and 20.2 for the insecure-resistant group. Seven months later the mothers of secure infants are still the least anxious on this scale (see figure 6). Differences between the three groups were not statistically significant ( $F(2,64) = 1.3$ , NS).

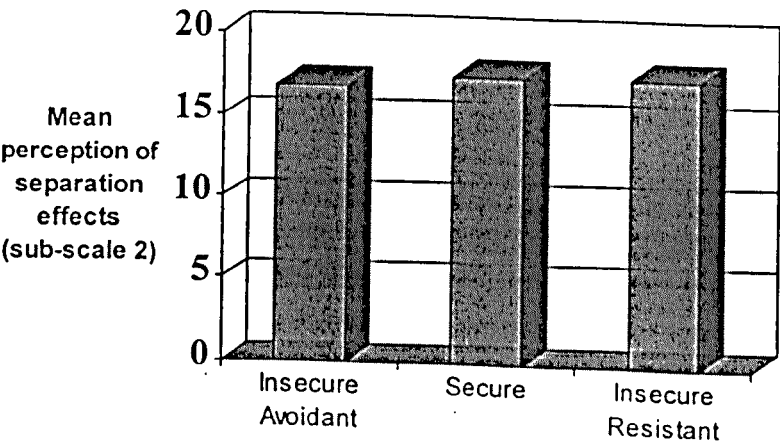
**Figure 6: Seventeen month general maternal separation anxiety (N=67)**



**3.4.7 Ten month perception of separation effects (sub-scale 2 of the MSAS)**

Mean scores for perception of separation effects (sub-scale 2) at ten months were as follows: 16.8 for the insecure-avoidant group; 17.5 for the secure group; and 17.5 for the insecure-resistant group. This suggests that as a group, the mothers of insecure-avoidant infants were less anxious on this scale than the other two groups (see figure 7). Differences between the three groups were not statistically significant ( $F(2,64) = .161, NS$ ).

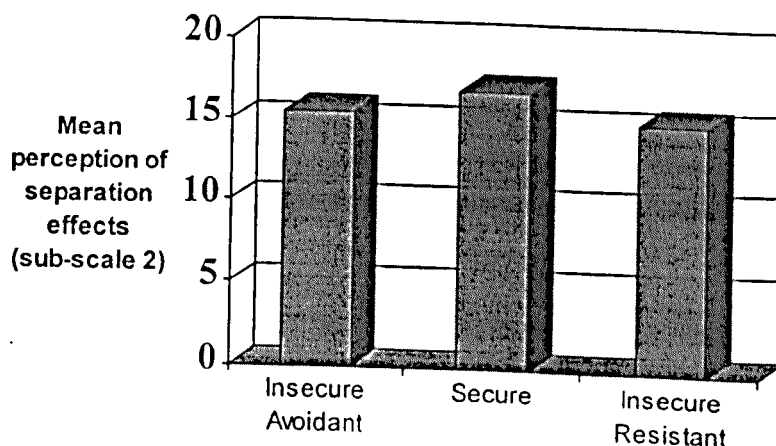
**Figure 7: Ten month perception of separation effects (N=67)**



### **3.4.8 Seventeen month perception of separation effects (sub-scale 2 of the MSAS)**

Mean scores for perception of separation effects (sub-scale 2) at seventeen months were as follows: 15.5 for the insecure-avoidant group; 17 for the secure group; and 15.1 for the insecure-resistant group. This suggests that as a group, the mothers of secure infants were more anxious about the negative consequences of separation than the other two groups (see figure 8). Differences between the three groups were not statistically significant ( $F(2,64) = 1.5$ , NS).

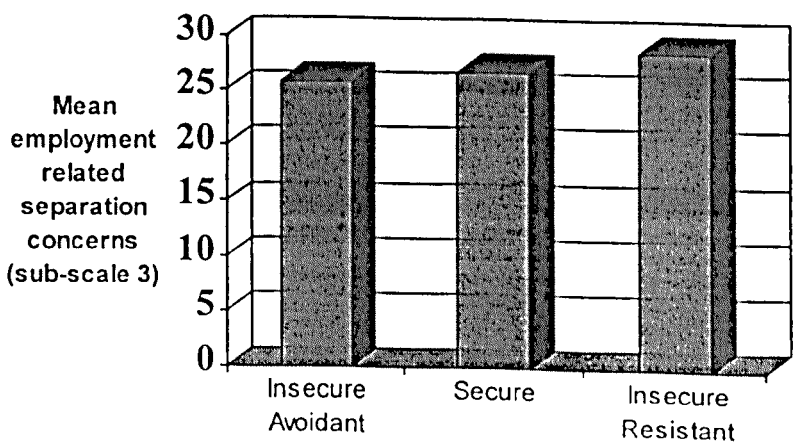
**Figure 8: Seventeen month perception of separation effects (N=67)**



**3.4.9 Ten month employment related separation concerns (sub-scale 3 of the MSAS)**

Mean scores for employment related separation concerns at ten months were as follows: 25.8 for the insecure-avoidant group; 26.7 for the secure group; and 28.7 for the insecure-resistant group. This suggests that as a group, the mothers of insecure-resistant infants were more anxious about employment related separation than the other two groups. Mothers of insecure-avoidant infants were least anxious about employment related separation (see figure 9). Differences between the three groups were not statistically significant ( $F(2,64) = .89, NS$ ).

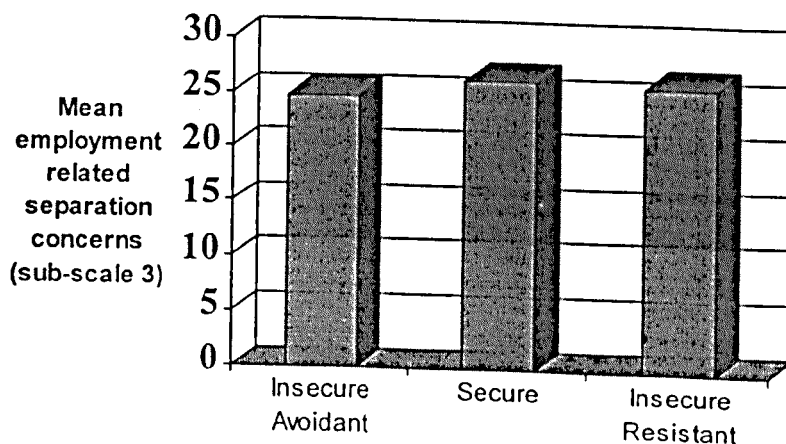
**Figure 9: Ten month employment related separation concerns (N=67)**



### **3.4.10 Seventeen month employment related separation concerns (sub-scale 3 of the MSAS)**

Mean scores for employment related separation concerns (sub-scale 3) at seventeen months were as follows: 24.8 for the insecure-avoidant group; 26.3 for the secure group; and 26 for the insecure-resistant group. As a group, the mothers of insecure-avoidant infants remained the least anxious on this scale (see figure 10). Differences between the three groups were not statistically significant ( $F(2,64) = .59$ , NS).

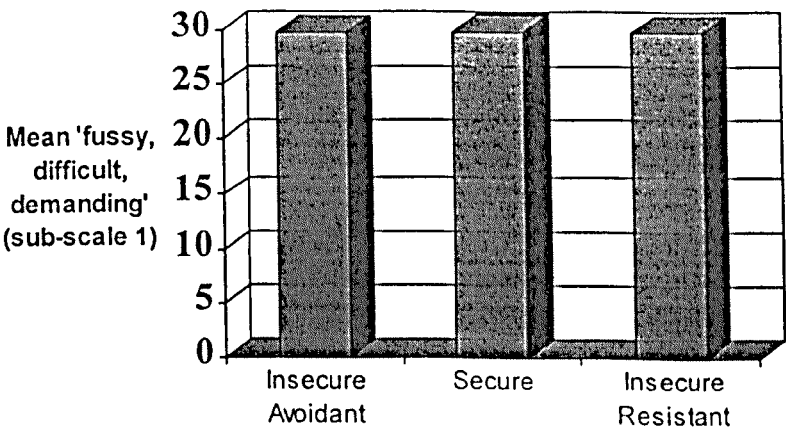
**Figure 10: Seventeen month employment related separation concerns (N=67)**



**3.4.11 Infant temperament: Fussy, Difficult, Demanding (sub-scale 1 of the ICQ)**

Mean scores on the 'fussy, difficult, demanding' sub-scale of the ICQ were as follows: 29.7 for the insecure-avoidant group; 29.8 for the secure group; and 29.7 for the insecure-resistant group. The difference between mean scores is minimal in the case of this variable (see figure 11) and was not statistically significant ( $F(2,64) = .001$ , NS).

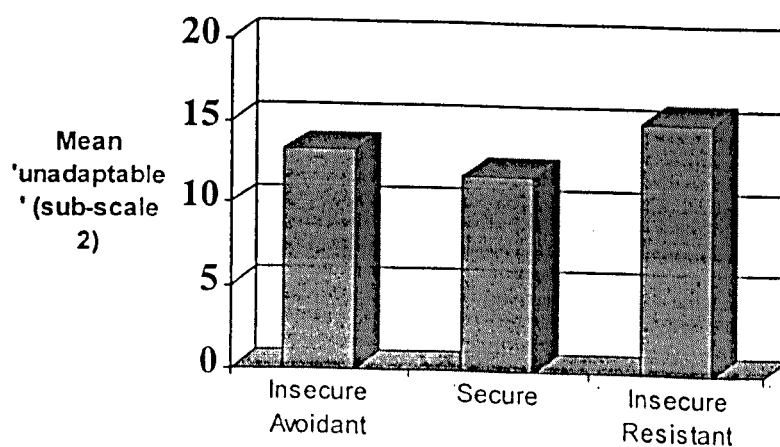
**Figure 11: Mean 'Fussy, Difficult, Demanding' (sub-scale 1)**



### 3.4.12 Infant temperament: Unadaptable (sub-scale 2 of the ICQ)

Mean scores for the unadaptable sub-scale of the ICQ were as follows: 13.3 for the insecure-avoidant group; 11.8 for the secure group; and 15.3 for the insecure-resistant group. This suggests that, as a group, insecure-resistant infants were more likely to be judged 'unadaptable' than infants in the other two categories (see figure 12). Differences between the three groups approached significance for this variable ( $F(2,64) = 2.78, p < .06$ ). This supports the discovery of a main effect of infant temperament on patterns of attachment security that emerged in the logistic regression.

**Figure 12: Mean 'Unadaptable' score (N=67)**

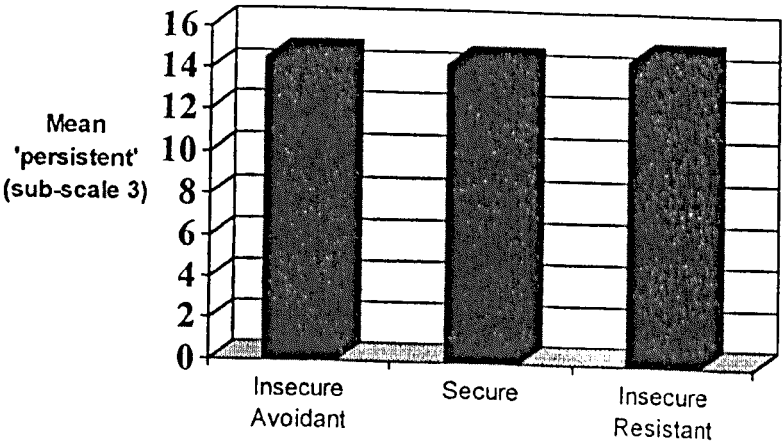




**3.4.13 Infant temperament: Persistent (sub-scale 3 of the ICQ)**

Mean scores on the Persistent sub-scale of the ICQ were as follows: 14.5 for the insecure-avoidant group; 14.3 for the secure group; and 15.3 for the insecure-resistant group. This suggests that, as a group, the insecure-resistant infants were rated more highly on the persistent sub-scale of the ICQ than the other two groups (see figure 13). Differences between the three groups were not statistically significant ( $F(2,64) = .03$ , NS).

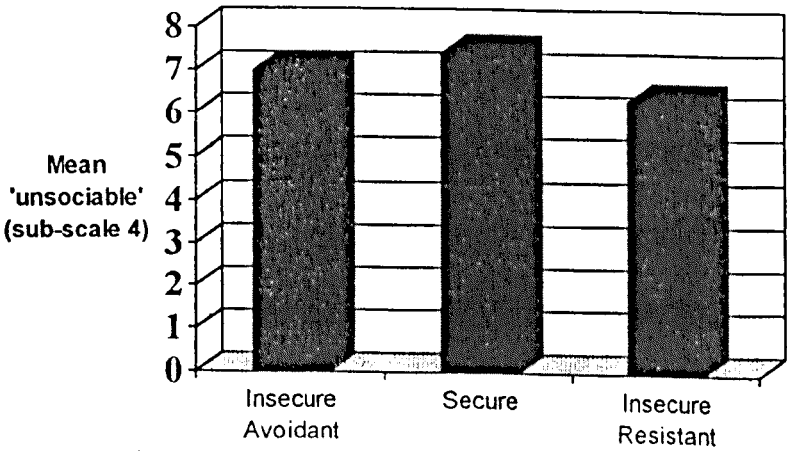
**Figure 13: Mean 'Persistent' score (N=67)**



**3.4.14 Infant temperament: Unsociable (sub-scale 4 of the ICQ)**

Mean scores for the Unsociable sub-scale of the ICQ were as follows: 7 for the insecure-avoidant infants; 7.4 for the secure infants; and 6.3 for the insecure-resistant infants. This suggests that, as a group, the secure infants were rated more highly on this scale than the other two groups (see figure 14). Differences between the three groups were not statistically significant ( $F(2,64) = .56, NS$ ).

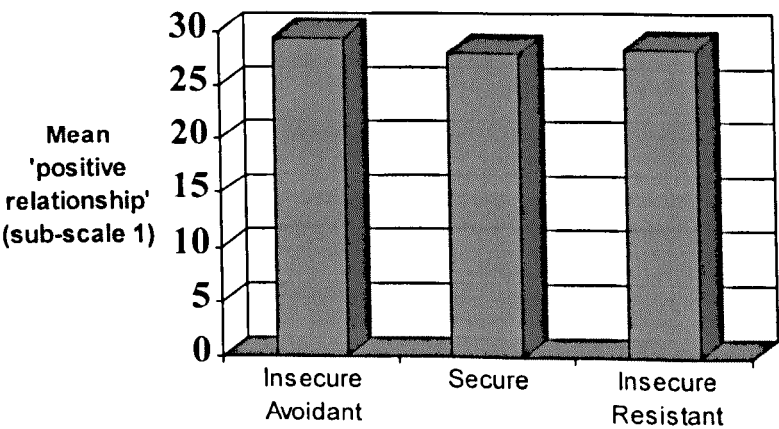
**Figure 14: Mean 'Unsociable' score (N=67)**



**3.4.15 Maternal sensitivity: Positive Relationship (sub-scale 1 of the CIS)**

Mean scores for the Positive Relationship sub-scale of the CIS were as follows: 29.4 for the mothers of insecure-avoidant infants; 28.1 for the mothers of secure infants; and 28.4 for the mothers of insecure-resistant infants. This suggests that as a group, the mothers of insecure-avoidant infants received higher ratings on this scale than the other two groups (see figure 15). Differences between the three groups were not statistically significant ( $F(2,64) = .70$ , NS).

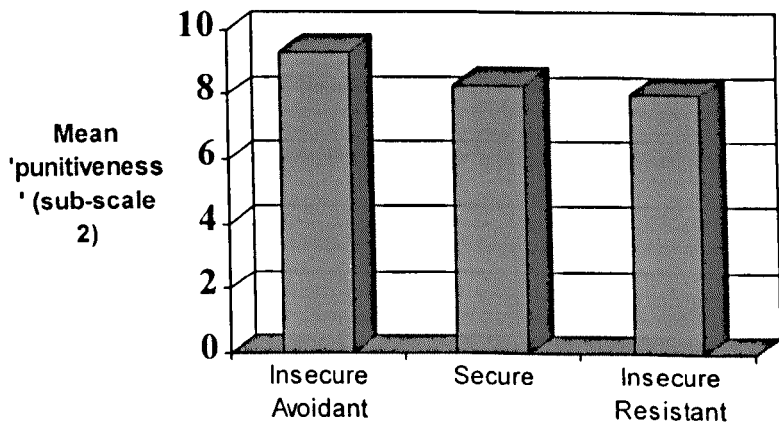
**Figure 15: Mean 'Positive Relationship' score (N=67)**



**3.4.16 Maternal sensitivity: Punitiveness (sub-scale 2 of the CIS)**

Mean scores on the Punitiveness sub-scale of the CIS were as follows: 9.3 for the mothers of insecure-avoidant infants; 8.3 for mothers of secure infants; and 8 for mothers of insecure-resistant infants. This suggests that as a group, mothers of insecure-avoidant infants received higher ratings on this scale than the other two groups (see figure 16). Differences between the three groups were not statistically significant ( $F(2,64) = 1.44$ , NS).

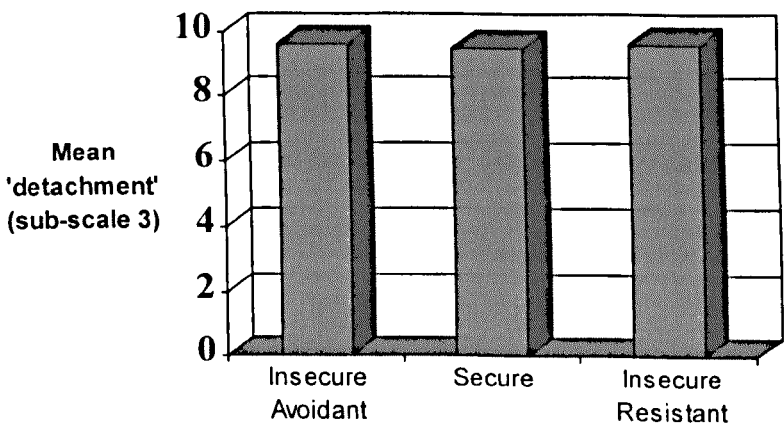
**Figure 16: Mean 'Punitiveness' scores (sub-scale 2)**



**3.4.17 Maternal Sensitivity: Detachment (sub-scale 3 of the ICQ)**

Mean scores for the Detachment sub-scale of the CIS were as follows: 9.6 for the mothers of insecure-avoidant infants, 9.5 for the mothers of secure infants; and 9.6 for the mothers of insecure-resistant infants. This suggests that as a group, mothers of secure infants received lower scores on this scale than the other two groups (see figure 17). Differences between the three groups were not statistically significant ( $F(2,64) = .11$ , NS).

**Figure 17: Mean ‘Detachment’ score (sub-scale 3)**



## **Section 4**

# ***Discussion***

## Section 4: Discussion

### 4.1 Overview

The aim of this study was to investigate the relationship between maternal separation anxiety, hours in non-parental child care and security of mother-infant attachment in early infancy. Research suggests that 'main effects' hypotheses in this area (e.g. the effects of non-parental child care, infant temperament or maternal sensitivity on patterns of mother-infant attachment) are too simplistic, and that what may be more useful would be to gain a better understanding of the *processes* involved in the development of an insecure mother-infant attachment relationship. This suggests looking at a number of variables alone and in combination. Hypotheses in the current study were stated to reflect this, with a focus on mothers' feelings about separation from the infant (real or anticipated). The mother has typically been ignored as a psychological agent in her own right in this area of research. This study therefore attempts to address this issue.

In the discussion that follows, the findings of this study are summarised along with the methodological issues arising from it. Interpretations of the results are offered (in the context of previous research findings) with some implications for clinical practice. Limitations of the study are discussed with ideas for future research. Finally, conclusions are drawn.

## **4.2 Summary of Research Findings**

### **4.2.1 Demographic and Descriptive Data**

This was a predominantly white, middle-class sample of mothers and infants. Most of the mothers were either married or co-habiting and most families consisted of two parents and two children.

All of the infants were seen at seventeen months (+/- two weeks). A greater number of females than males participated in the study (41 and 26 respectively). Almost one-third of the infants in this sample were the mother's first child and almost half were the second. The remainder were third, fourth or (in just one case) fifth.

At three months of infant age more than half of the mothers questioned had plans to work/return to work at some point during the infant's first year. By seventeen months nearly three-quarters of the sample were actually working (full or part-time). This figure is higher than that estimated (50%) in the 1997 census. The average age of the infant when these mothers began to work outside the home was 22 weeks, although this varied widely.

At three months infant age, two-thirds of the sample planned to use some form of non-parental child care arrangement during the infant's first year. This figure was mostly made up of the women who had planned to work



outside the home. By seventeen months, approximately half of the sample were using non-parental child care. For these thirty-two cases, fifty per cent of the infants were cared for by a childminder or in a child/care centre, nursery or crèche. Twenty-five per cent were cared for by a nanny, friend or grandparent and the remaining twenty-five per cent experienced a combination of non-parental child care arrangements.

On average, those infants enrolled in non-parental child care experienced approximately twenty-three hours per week over approximately eleven months (again figures varied widely). A calculation was made to establish total hours of non-parental child care ('maternal separation') by multiplying hours per week by number of weeks of non-parental child care. On average, infants who were experiencing non-parental child care had received 288 hours of care by the age of seventeen months, ranging from 12 to 595 hours. It should be noted that in the main analysis, the complete sample was included and total hours of non-parental child care ranged from 0 to 595 hours.

In this sample, child care arrangements appeared to be quite stable. Most infants (two-thirds of those enrolled in non-parental child care) had experienced just one child care arrangement. Only three infants experienced more than two child care 'starts'.

#### **4.2.2 Maternal separation anxiety and (1) child care plans (2) hours of non-parental child care (total hours maternal separation) (3) infant temperament and (4) maternal sensitivity**

In stage one of the analysis, ten and seventeen month maternal separation anxiety scores (sub-scales 1–3) were examined in relation to all other linear variables. A number of interesting results emerged.

##### **4.2.2.1 Maternal separation anxiety and plans to use child care**

Levels of general separation anxiety and employment related separation concerns in the first year were related to mothers' plans to use child care. Mothers who expressed more worry, or guilt about leaving their infants, who had stronger beliefs about the importance of maternal care and greater concerns about leaving the child in order to work outside the home planned to use non-parental child care later (in fourteen cases, not at all) than less anxious/concerned mothers. This is consistent with McBride and Belsky's (1988) finding that mothers with higher scores on each sub-scale of the MSAS planned to stay home rather than be employed.

##### **4.2.2.2 Maternal separation anxiety and hours of maternal separation**

Levels of general separation anxiety and employment related concerns were also related to the total number of hours that infants spent in non-parental child care (hours of 'maternal separation'). Infants of mothers with higher levels of general separation anxiety in the first year, spent fewer hours in non-parental child care. Infants of mothers with higher levels of concern (during

the first and second years) about the effects of employment on the infant also spent fewer hours in non-parental child care. Again, these results tie in with McBride and Belsky's (1988) finding that women with greater general separation anxiety planned to stay home with the infant, and with Stifter and Coulehan's (1993) finding that mothers who worked the fewest hours per week were more likely to report being most concerned about the effects of separation on their infants.

#### **4.2.2.3 Maternal separation anxiety and infant temperament**

Infant temperament was related to scores on the MSAS. Mothers of more 'fussy, difficult, demanding' infants had higher levels of general separation anxiety in the first and second years. Levels of employment related separation concern in the first year were not related to this first sub-scale, but by the second year they were – the more 'difficult' the infant the less the mother was concerned about employment outside the home. Higher 'persistence' scores were associated with higher levels of general separation anxiety and greater concerns about the effects of separation on the infant during the second year. Finally, mothers of less sociable infants were less concerned in the first year about the effects of employment outside the home.

Infant temperament (measured at three months) has been shown to contribute to the variance in mothers' anxiety or concerns about being away from their infants for brief separations (sub-scale 1); to the variance in mothers' perceptions of the infant's reactions to separation and the positive or

negative effects of separation on the child (sub-scale 2); and to the variance in separation anxiety relating to balancing motherhood and employment outside of the home (McBride and Belsky, 1988). The current study found a different pattern of relationships between infant temperament and scores on the MSAS. However, a direct comparison between the two studies cannot be made as infant temperament was measured at different time points (three and ten months), on different versions of the ICQ.

#### **4.2.2.4 Maternal separation anxiety and maternal sensitivity**

Maternal sensitivity was related to scores on the MSAS. More 'detached' mothers were more concerned than less 'detached' mothers about the effects of separation on the infant in the first year, but less concerned during the first and second years about the effects of employment outside the home employment. More 'punitive' mothers had higher levels of general separation anxiety during the second year than less 'punitive' mothers. The latter finding may tie in with Stifter et al's (1993) report that that employed mothers who scored high on employment related separation concerns demonstrated more intrusive (overcontrolling) behaviours than employed mothers with low employment related separation concerns and non-employed mothers with both low and high levels of employment related separation concerns.

### 4.2.3 Summary

Stage one of the analysis highlighted the relationship between maternal separation anxiety and a number of child care, infant and mother characteristics. Maternal separation anxiety was found to be related to a mother's plans to use child care, to the number of hours the infant spends in non-parental child care, to the infant's temperament and to the sensitivity of the mother. However, correlational analysis does not allow us to state the causal direction of these links.

### 4.2.4 Investigation of Hypotheses

In stage two hypotheses one to five were investigated.

#### 4.2.4.1 Hypotheses 1 and 2

Hypotheses 1 and 2 concerned the **characteristics** of maternal separation anxiety. In this study mothers completed the MSAS at ten months and again at seventeen months. The highly reliable stability coefficients for the summed items of sub-scales 1 and 3, and to a lesser extent sub-scale 2, provide evidence for the stability of scores on the MSAS over time, suggesting that those mothers who are anxious at ten months were also more likely to be anxious at seventeen months. The correlation coefficients obtained in this study (.79, .53, .72) were consistent with those quoted in previous studies (see Hock et al, 1988; McBride and Belsky, 1988; Hock et al, 1989).

Sub-scale 2 has been observed to have the lowest stability in all studies.

This may be because responses to items on this sub-scale are more closely related to the developmental stage of the infant (e.g. 'It is good for my baby to spend time away from me so that s/he can learn to deal independently with unfamiliar people and new situations') than items on the other sub-scales. In other words, what the mother feels is appropriate (in terms of separation experiences) for the infant at ten months may be quite different to what she feels is appropriate at seventeen months.

The literature suggests that employment status may have a differential effect on levels of maternal separation anxiety over time. The results of this study provide some support for this claim. In the first stage of the analysis, each of the sub-scales was correlated across the seven month period (i.e. from ten to seventeen months) taking each group (employed during first seventeen months/not employed during first seventeen months) separately. Results of this analysis suggested that whilst sub-scales 1 and 3 were more stable for women who worked outside the home than for those who were not employed, the opposite was true of sub-scale 2. These findings were explored in greater detail in a multivariate analysis of variance.

Results of the multivariate analysis suggested that differences in levels of separation anxiety existed not only between the two groups (employed/not employed), but also between the two time points, and for the first scale, as an *interaction* between the two variables (time and employment status).

On the first sub-scale mothers who were not working were significantly more anxious about separations from the infant at both ten and seventeen months than employed mothers. This finding is consistent with previous research (see Stifter and Coulehan, 1993). Whilst absolute degrees of anxiety decreased for both groups over time, there was a significantly greater reduction in general separation anxiety for those women who were not employed.

On the second sub-scale, the difference in scores between the two groups, at ten and seventeen months, was not significantly different, although again, the non-employed group scored higher. Scores on this sub-scale dropped significantly for both groups over the seven months, but not differentially for employed/non-employed groups.

Finally, scores on the third sub-scale (employment related concerns) were significantly higher for those women who were not working outside the home than for those who were. This finding is consistent with previous research (see DeMeis, Hock and McBride, 1986). Again, the anxiety in both groups declined significantly over time, but not differentially for employed/non-employed groups.

## **Summary**

The eighteen mothers who were not working in the first seventeen months were more anxious about separation than the 49 mothers who were employed, on each of the three sub-scales at ten and seventeen months (with the exception of sub-scale 2 at seventeen months).

### **4.2.4.2 Hypotheses 3, 4 and 5**

Hypotheses 3, 4 and 5 were concerned with the consequences of maternal separation anxiety for the infant's attachment status. A logistic regression was performed on attachment status (secure/insecure) with all potential predictor variables entered. Predictor variables included: characteristics of the infant (gender, birth order and temperament); characteristics of the mother (socio-economic status, educational status, maternal sensitivity and maternal separation anxiety); employment characteristics (employment plans at three months and employment status); and child care characteristics (child care plans, age of entry into non-parental child care, type of child care, number of child care starts, number of months of non-parental child care, average hours per week in non-parental child care and total hours of non-parental child care ('maternal separation')).

Only one variable emerged as reliably significant in distinguishing between the two groups – the 'Unadaptable' sub-scale of the Infant Characteristics



Questionnaire (ICQ). Prediction success was unimpressive however, and certainly would not suggest that higher scores on this sub-scale alone could reliably predict an insecure mother-infant attachment relationship.

**Infant temperament** was examined in greater detail by looking at the scores on the Infant Characteristics Questionnaire (ICQ) in relation to the three-category attachment classification. The bar charts in figures 11-14 show mean scores for each group of infants (insecure-avoidant, securely attached and insecure-resistant) on each sub-scale of the ICQ. Differences between the three groups on this measure were minimal and none reached statistical significance. However, the second sub-scale approached significance. Mean scores on this scale suggested that as a group, secure infants were judged the most 'adaptable'.

Scores on the MSAS were not associated with mother-infant attachment classification as predicted in the third hypothesis. The lack of a main effect of maternal separation anxiety on patterns of infant-attachment is contrary to the findings of McBride and Belsky (1988) but consistent with those of Stifter and Coulehan (1993). Again, some interesting trends appear in the data when the three-class model replaces the secure/insecure dichotomy. Although any differences between the three groups did not reach statistical significance, as a group, mothers of secure infants appeared to express the least anxiety and mothers of insecure-resistant infants the most, on the first sub-scale of the MSAS (general separation anxiety) at both ten and seventeen months. This

contradicts the pattern of anxiety reported at three and nine months (summed) by McBride and Belsky (1988).

On the-second sub-scale (perception of separation effects) differences between the three groups were minimal at ten months, however, by seventeen months differences between the two insecure groups and the secure group had become more apparent (although they remained not statistically significant). Observance of the means demonstrates that anxiety levels declined over the seven month time period for both groups of mothers of insecure infants, whereas for the mothers of secure infants anxiety levels appeared almost constant.

At ten months mothers of insecure-resistant infants expressed the highest level of concern on the third sub-scale of the MSAS (employment related separation concerns) at ten months. This trend is contrary to McBride and Belsky's (1988) significant finding that mothers of secure infants expressed the most employment related separation concerns at three and nine months (whether employed or not employed). By seventeen months mothers of insecure-resistant infants in this study had scores more in line with those of the mothers of secure infants. Finally, mothers of insecure-anxious infants expressed the least anxiety (of the three groups) about employment related separations at both ten and seventeen months.

It was predicted that mothers who experience a degree of 'conflict' (i.e. those who were working outside the home in the context of high employment related separation anxiety) would be more likely to behave in ways that would promote insecure attachments, than mothers who were not working, or mothers who did work but did not have high concern about the effects of employment related separations. The interaction of scores on the third scale of the MSAS (employment related separation concerns) with employment status did not emerge as a reliable predictor of insecure attachment, therefore the fourth hypothesis could not be accepted. This finding is not consistent with results reported in Stifter et al (1993), although their 'confirmatory prediction analysis' was based on an extremely small sample size (less than three cases in some cells).

It has been suggested that employment/child care status (and subsequent 'maternal separation') might interact with maternal separation anxiety to increase/decrease the risk of an insecure attachment. The fifth hypothesis predicted that infants who are securely attached to their mothers would be distinguished from infants who are insecurely attached on the basis of their mothers' scores on the MSAS and 'total hours maternal separation'. This was not the case and therefore the fifth hypothesis could not be accepted.

### 4.3 Key Findings

1. Mothers who express more worry or guilt about leaving their infants, who believe more strongly in the importance of maternal care (MSAS sub-scale 1) and who have greater concerns about leaving the infant in order to work (MSAS sub-scale 3), plan to use non-parental child care later than mothers with lower scores on these measures. Related to this is the finding that infants of these mothers experienced fewer hours of non-parental child care/maternal separation across the seventeen month period studied.
2. Levels of separation anxiety are associated with infant temperament and maternal sensitivity, however, the causal direction of these links are not known.
3. Scores on the MSAS demonstrated moderate to strong stability over a seven month period. Employment status impacted on scores. Overall, women who were not employed outside the home were more anxious about the effects of separation on the infant. However, in both groups (employed in first seventeen months/not employed in first seventeen months) anxiety levels declined over time.
4. Levels of maternal separation anxiety did not predict attachment security, either alone or in combination with other variables. The second sub-scale ('unadaptable') of the Infant Characteristics Questionnaire (ICQ) emerged from the analysis as a reliable predictor of attachment security/insecurity, although its predictive power was limited. Patterns of attachment were not explained by any of the other variables (alone or in combination) measured in this study.

## **4.4 Methodological Considerations**

A key factor to be considered when interpreting the results of this study relates to the sample (characteristics and size) of mothers and their infants and subsequent data analysis.

### **4.4.1 Characteristics of the sample**

This was a self-selecting sample of predominantly white, middle-class mothers living in stable partnerships (although every attempt was made to include families from a range of backgrounds and ethnic groups). This is typical of research in this area and calls into question its representativeness for the population as a whole. This is an important point to note since economic disadvantage in particular, has been identified as an important variable to account for in this type of research (Spieter and Booth, 1988). Families of secure infants have been found to have higher average income-to-needs ratios than families of insecure infants (NICHD, 1997).

Additionally, in the currently study there was a 67% participation rate, therefore, this sample may not even be representative of the sample as a whole. There is no way to know whether insecure mother-infant attachment relationships would be more or less frequently observed in those participating in the main study who declined to participate in the current study.

#### **4.4.2 Sample size**

Whilst a reasonable number of mother-infant dyads were assessed (as many as possible given the time constraints of this study) the small number of infants who were eventually classified as 'insecure-resistant' meant that in the main analysis the two insecure groups were necessarily treated as one group. This may have masked some important differences between them and although an attempt was made to investigate this by looking at the three groups separately on a number of variables, they could not be kept separate in the predictive analysis (logistic regression).

#### **4.5 Interpretation of findings**

Recent studies suggest that non-parental child care is not, in itself, a risk factor for the development of an insecure mother-infant attachment relationship (Roggman et al, 1994; Symons, 1998; NICHD, 1994). This study provides further support for this finding. Total hours of non-parental child care (or 'total hours maternal separation') did not emerge as a significant predictor of insecure attachment. In fact, when the data were examined according to the three-class model of attachment, secure infants had spent (on average) longer in non-parental child care than either of the two insecure groups (although differences between the three groups did not reach statistical significance).

Other child care characteristics were also entered into the analysis, including the age of the infant when the mother planned to use child care (asked at three months), the type of child care used and the number of child care starts. Consistent with previous studies, none of these variables (alone) emerged as significant predictors of attachment security/insecurity.

Today it is generally agreed that non-parental child care *per se* is not a sufficient condition for the development of an insecure mother-infant attachment, and that other factors may influence child outcomes.

Characteristics of the child, the mother and the family *in interaction* with child care status have been identified as important factors in the developing mother-infant attachment relationship. In the NICHD (1997) study low maternal sensitivity and poor quality child care; and boys in long hours of child care interacted to increase the chances of an insecure relationship (NICHD, 1994). What are less well understood are the processes mediating observed links between infant/mother/family/child care characteristics and patterns of attachment.

Most research in this area has failed to account for the mother's thoughts and feelings about separation from the infant. This study attempted to address this issue by considering the mother as a psychological agent in her own right. It was based on the notions that (1) levels of maternal separation anxiety during the child's infancy might be different, or change differentially, for women who work outside the home (thereby experiencing frequent, in

some cases daily, separations from the infant) and women who are not working outside the home and (2) that maternal separation anxiety (perhaps through its effects on maternal sensitivity and patterns of mother-infant interaction) might have consequences for the developing mother-infant attachment relationship.

Theoretically, extreme levels of maternal separation anxiety are viewed as disturbances in a woman's psychological functioning that may contribute to dysfunctional mother-child relationships (Lutz and Hock, 1994). According to Benedek (1970), heightened separation anxiety interferes with a mother's ability to separate from her child, which may disrupt her own process of individuation as a mother. Excessive amounts of separation anxiety may give rise to overindulgent, oversolicitous, and extreme overprotective behaviours that undermine a child's attempts to become autonomous. A mother with high anxiety may have difficulty perceiving herself as a person with her own unique needs and may develop an 'enmeshed' relationship with her child. In contrast, Benedek posited that the absence of any separation anxiety reflects emotional abandonment of the child and prevents the mother from becoming emotionally attached or emotionally connected to her child. Thus Benedek was implicitly stating that moderate levels of separation anxiety represent healthier psychological functioning in mothers and are less likely to contribute to the development of 'dysfunctional' relationships.



Contrary to expectation, maternal separation anxiety did not emerge as a significant predictor of infant attachment security either on its own, or in combination with other variables. One reason for this might be that the sample was not big enough for the statistical analysis to pick up any significant differences between the groups. With a larger sample any differences that do exist would be more likely to reach statistical significance (avoiding a type II error). Also, a larger sample size would give larger numbers at each end of the normal distribution. If Benedek (1970) is right, it is the infants of these mothers (with very high and very low maternal separation anxiety scores) who are at greater risk of developing an insecure attachment to their mother. There may well have been a bias in this sample of typically well-educated, married, middle-class mothers in the direction of less extreme scores on this measure.

Another reason (previously mentioned) why this variable did not emerge (either alone or in combination with other variables) as a significant predictor of secure/insecure attachment could be that the two insecure groups (each with their own specific characteristics) were collapsed into one category for the main analysis, thus distorting the characteristics of the group as a whole. It became clear when looking at trends in the data for the three-class model that the two insecure groups were qualitatively different.

Despite these null findings there were some interesting differences in levels of maternal separation anxiety and employment status. In this sample, those

women who did not work outside the home were generally more anxious about the effects of separation on the infant, although levels of anxiety declined over time for both groups. Related to this is the finding that those mothers who were more anxious about the effects of separation not only planned but in most cases, did use child care later (or in some cases, not at all) than less anxious mothers.

It could be argued that what this indicates is a good match between the needs of the mother and her perception of her infant's needs, although clearly we do not know the direction of this effect. This assumes however, that women are reporting their anxiety 'honestly' and are not (as has been suggested) 'defensive' about their concerns. The MSAS has been reported to have a moderate, negative association with social desirability (Hock et al, 1989).

We also do not know the mother's actual role preference or indeed, role satisfaction. It may be that amongst the women in this study who were employed there were some who would have preferred to stay home with their infant, and that amongst the women who were not working outside the home, there were some who would wish to be. Gnezda (1983) found that women who expressed greater separation anxiety were more invested in the maternal role and less career orientated and that role preference, independent of employment status, influenced scores on the MSAS.

It is interesting to note that separation anxiety reduces over time. Is this because mothers learn that their infants can cope with separation, or is it because the women themselves learn to cope with the anxiety it produces? We do not know the answer to this question but what we do know, as a result of findings in this and previous studies is that maternal concerns about separation are not static. As a group, working mothers form attitudes over time that are increasingly consistent with a balance between motherhood and employment. Declines in mothers' separation anxiety may also be related to the developmental stage of the infant and the mothers' changing feelings and thoughts about the infant's needs over time. The closeness that may be optimal in the first few months may become 'intrusive' as the infant grows older and becomes more independent. Finally, characteristics of the mother's job and the type and quality of the care setting for the infant may be important factors influencing the integration of motherhood and employment.

This study was unable to distinguish between the two groups (securely attached and insecurely attached) on the basis of child care, maternal or family characteristics measured in this study, including maternal separation anxiety. A measure of infant characteristics, unadaptability (from the Infant Characteristics Questionnaire) was the only variable to emerge as significant in the main analysis but with only 19% of the insecure infants correctly classified, the picture is far from complete.

Previous research has failed to highlight infant temperament as a key variable in the developing mother-infant attachment relationship (Belsky et al, 1995). However, it has been suggested that the mother's own behaviour and personality can modify certain 'emotional characteristics' of the infant. Maternal sensitivity was measured in this study but no significant interactions were observed between infant temperament and maternal sensitivity. This may be because numbers were too small or because the measure was not sensitive enough. Maternal personality was not measured. The finding that secure infants were most 'adaptable' however does seem to fit with the general notion that we hold of the secure infant as more confident and more able to seek and receive care in a range of settings (see Sroufe, 1988).

#### **4.6 Clinical and Service Implications**

Adopting the attachment paradigm as a framework for the development of primary prevention and early intervention has been proposed in the Health Select Committee (1997). Primary prevention of mental health and emotional difficulties can either adopt the medical model as a framework (e.g. using randomised control trials to research the most effective treatment/combination of treatments for a specific disorder) or, it can seek to research the psychosocial risk/protective factors, which are less amenable to experimentation. This study represents an attempt at the latter. The implications of this study, therefore, relate more to social policy and preventative interventions than to individual clinical populations.

Social competence is increasingly perceived as fundamental to the psychological development of children (Guralnick and Neville, 1997) and it has been linked to a secure attachment relationship in infancy. A secure attachment is said to provide the child with the resilience, trust and ability to regulate his/her own emotion and develop mentalising and self-reflective capacities necessary for dealing with adverse life events and hazards (Fonagy et al, 1997). If this is the case, the question for us as psychologists (and social policy makers) is what can we do to promote the development of a secure mother-infant attachment relationship?

Perhaps the most notable finding in this study, is the lack of evidence for a link between long hours of non-parental child care and higher rates of insecurity of attachment. Whilst interesting relationships amongst the variables included in this study have been identified (particularly links between levels of separation anxiety and child care and employment plans/child care and employment status) no conclusions can be drawn with regard to predictions to attachment security.

If a link (direct or indirect) between extreme levels of separation anxiety and insecure mother-infant attachment relationships had been detected, it might have been tenable to suggest that the MSAS be used as a screening measure (in much the same way as the Edinburgh Post-Natal Depression Scale (EPDS: Cox et al, 1987) is used by Health Visitors) to identify those mothers of babies who may be at greater risk of developing an insecure

attachment, and offer some kind of intervention. Preventative clinical psychology services could then receive referrals directly from midwives and health visitors and offer consultation to these professional groups to support them in their screening and counselling roles.

#### **4.7 Limitations of the study and ideas for future research**

This study has failed to explain why 21 infants were not securely attached to their mothers (and why 46 were) as it had hoped to do. There may be a number of possible reasons for this. Perhaps the simplest explanation is that the numbers in each group were too small to pick up any interactions between key variables. In another year a further 70 infants will have been assessed'. At this point the analysis described in this study can be re-run. Alternatively, some of the measures used in the study may not have been sensitive enough or may have been compromised by the modifications that were made in order to make them appropriate for use with this age group (see particularly the revisions made to the Caregiver Interaction Scale, appendix 4).

A third possibility is that important variables were not measured. Whilst every attempt was made to measure key variables (identified in the literature) it would never have been possible to cover all possibilities in a project of this size, with these time constraints. The most obvious measure that was not available to this researcher at the time of the analysis was quality of non-parental child care. In another year these data will be available and can be

included in a reanalysis with the larger sample mentioned above. The NICHD (1997) study found a linear increase in security as child-care quality increased. It has been suggested that a mother's behaviour may be more significant in the lives of children in low quality child care, who would be less likely to form secure attachments to their alternative caregivers (Howes and Hamilton, 1992). In the NICHD (1997) study children in low quality child care were more strongly affected by their mothers' behaviour than were children in high quality care. For children in low-quality child care, the probability of a secure attachment was low (.44 - .51) if the mother was less sensitive and responsive and high (.69 -.73) if she was highly responsive. Thus high-quality child care seemed to serve a compensatory function for children whose maternal care was lacking. The suggestion is that poor quality child care may add to the risks already inherent in poor mothering, so that the combined effects are worse than those of low maternal sensitivity and responsiveness alone.

Another variable that has not been accounted for in this study is the mother's own attachment representation. Fonagy, Steele and Steele (1991) report findings of inter-generational patterns of attachment using the Adult Attachment Interview (AAI; George, Kaplan and Main, 1985). Based on findings from a number of studies the researchers state that a mother's attachment status, measured on the AAI, reliably predicts infant attachment security as measured in the Strange Situation. There are also links between adult attachment representations and maternal separation anxiety. Mental

representations of attachment relationships (assessed pre-natally) have been found to contribute to women's maternal separation anxiety after the infant's birth (Lutz and Hock, 1994). Again this could be rectified in future research, although finding a suitable measure of adult attachment may prove difficult. The AAI requires extensive and expensive training and is time consuming both for researcher and participant. At present there do not appear to be any quicker, less costly measures available. The self-report measures that do exist (such as the Adult Attachment Scale developed by Collins and Read (1990) and the Attachment Style Measure developed by Simpson (1990)) appear to measure something conceptually different to the AAI (Crowell et al, 1999).

Finally, it is important to acknowledge the fact that this study focused exclusively on mothers and their relationship with the infant. As is typical in this area of research, data from fathers were not included in the analysis. It is generally thought that anxiety about separation from the infant is experienced and exhibited differently in father and mothers, and has different origins (Hock, McBride and Gnezda, 1989). Psychological theories and the biological ethological orientations (Hinde, 1984) have stressed the primacy of the mother's role in infant caregiving. Unlike fathers, mothers who leave their infants may experience heightened anxiety about separation because they are violating a traditional societal norm (Scarr, 1984). This particular role related conflict, although not relevant for fathers, is important in our understanding of the maternal perspective. However, in order to gain a fuller



understanding of the meaning of separation in families it is important to understand fathers' concerns about separation, and perhaps the concordance or discordance of mothers' and fathers' concerns and the implications this has for family relationships. These data are being collected in the main study and could be included in a reanalysis with the larger sample referred to above.

#### **4.8 Conclusions**

In 1997 it was estimated that approximately half of the women with a child under the age of five were employed outside the home (full or part-time). The percentage of employed women in this study (73%) was substantially higher than this. This rise in maternal employment has been accompanied by an increase in demand for purchased child care. Almost half of the infants in this study experienced non-parental child care (in a variety of child care settings) in the first seventeen months. This means that 'maternal separation' (on average 288 hours in the first seventeen months) was a frequent occurrence in the lives of many of the mothers and infants in this study.

Following Bowlby (1969, 1973) it was suggested that hours away from the mother during the first year of life might adversely affect the proximal processes of mother-infant interaction and subsequently interfere with the developing mother-infant attachment relationship. Early studies of the 'effects' of child care seemed to support this hypothesis.

More recent studies of infants entering care in the 1990s have not supported a direct link between non-maternal care in the first year and attachment insecurity and the current study provides further evidence of this. Most researchers in this field have moved away from direct effects hypotheses to investigate the *processes* mediating relationships between maternal, infant, family and child care variables and security of mother-infant attachment.

Taking the attachment paradigm as a framework, this study aimed to focus attention on mothers' feelings about separation from the infant. It was hypothesised that the way the mother felt about separation (real or anticipated) might influence the way she interacted with her infant, and that this might have an effect (either alone or in combination with other variables) on the developing mother-infant attachment relationship.

With this in mind, the current study was designed to investigate a relationship between maternal separation anxiety, hours in non-maternal child care ('maternal separation') and security of mother-infant attachment in early infancy. It was hypothesised that maternal separation anxiety would interact with hours of non-maternal child care ('maternal separation') to either increase or decrease the risk of an insecure mother-infant attachment relationship. However, this was not the case.

In this study, maternal separation anxiety (assessed on the MSAS) was not predictive (alone or in combination with other variables) of attachment status.

However, significant differences in levels of separation anxiety were found between mothers who were and mothers who were not employed outside the home. What is more, levels of separation anxiety were related to a number of variables, including the age of the infant when the mother planned to use child care, the total hours of non-maternal child care, infant temperament and maternal sensitivity.

No firm conclusions can be drawn from these results. Interesting trends appear in the data but the study is limited by the low number of insecure infants (particularly the insecure-resistant category) in the sample and the fact that the main (predictive) analysis was carried out on the insecure/secure dichotomy rather than on the three groups separately.

The null findings in this study should not dissuade us from investigating this concept further as there were some interesting relationships between variables and a number of clear trends in the data. According to Benedek (1970), it is the more extreme levels of separation anxiety that constitute a potential risk factor for the development of an insecure mother-infant attachment relationship. This could not be adequately addressed in this study. The effects of very high or very low levels of maternal separation anxiety in combination with other factors, such as the number of hours in non-maternal child care and the quality of that child care, may be worthy of further investigation particularly as significant relationships would hold important implications for social policy and preventative clinical work.

Finally, given the fact that a secure mother-infant attachment relationship has been associated with greater resilience for stressful life events, and that an insecure mother-infant attachment is generally regarded as an important vulnerability factor for a number of difficulties in both childhood and adulthood, it is hoped that future research will continue to unravel the connections between mother, infant, family, child care and psychosocial factors and patterns of mother-infant attachment.

## **Section 5**

# *References*

## **Section 5: References**

Ainsworth, M.D.S., Bell, S.M., and Slayton, D.J. (1974) Infant-mother attachment and social development: 'Socialisation' as a product of reciprocal responsiveness to signals. In P.M. Richards, (Ed.) The Integration of a Child into a Social World (pp. 99-135). London: Methuen.

Ainsworth, M.D.S. and Wittig, B. (1969) Attachment and exploratory behaviour in one year olds in a strange situation. In B. M. Toss (Ed.), Determinants of Infant Behaviour (Vol. 7). London: Methuen.

Ainsworth, M.D.S. and Eichberg, C. (1991) Effects on infant-mother attachment of mother's unresolved loss of an attachment figure, or other traumatic experience. In C.M. Parkes, J. Stevenson-Hinde, J., and P. Marris. Attachment across the life-cycle. London: Routledge.

Ainsworth, M.D.S., Blehar, M.C., Waters, E. and Wall, S. (1978) Patterns of Attachment: A Psychological Study of the Strange Situation. Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Arnett, J. (1989) Caregivers in day-care centres: Does training matter? Journal of Applied and Developmental Psychology, 10, 541-552.

Bates, J., Freeland, C., and Loundsbury, M. (1979) Measurement of infant difficulties. Child Development, 50(3), 794-803.

Belsky, J. (1988) The "effects" of infant day care reconsidered. Early Childhood Research Quarterly, 3, 235-272.

Belsky, J. and Cassidy, J. (1994) Attachment: theory and evidence. In M. Rutter and D. Hay (Eds), Development through life: a handbook for clinicians (pp. 373-402). Oxford: Blackwell Scientific Publications.

Belsky, J. and Isabella, R. (1988) Maternal, Infant and Social-contextual determinants of attachment security. In J. Belsky and T. Nezworski (Eds), Attachment Theory, Social, Developmental and Clinical Perspectives (pp. 153-184). London: The Analytic Press.

Belsky, J. and Rovine, M. (1988) Nonmaternal care in the first year of life and security of infant-parent attachment. Child Development, 59, 157-167.

Belsky, J., Rosenberger, K., and Crnic, K. (1995) The origins of attachment security: Classical and contextual determinants. In S. Goldberg, R. Muir, and J. Kerr (Eds), Attachment theory: Social, Developmental and Clinical Perspectives (pp. 153-183). London: Analytic Press.

Belsky, J. and Steinberg, L. (1978) The effects of daycare. Child Development, 49, 929-949.

Benedek, T. (1959) Parenthood as a developmental phase. Journal of the American Psychoanalytic Association, 7, 389-417.

Benedek, T. (1970) Motherhood and nurturing. In E.J. Anthony and T. Benedek (Eds.) Parenthood: Its psychology and psychopathology (pp. 153-166). Boston: Little, Brown.

Bowlby, J. (1969) Attachment and Loss (I): Attachment. New York: Basic Books.

Bowlby, J. (1973) Attachment and Loss (II): Separation, Anxiety and Anger. New York: Basic Books.

Bowlby, J. (1988) A Secure Base. New York: Basic Books.

Brannen, J., Moss, P., Owen, C., and Wale, C. (1997) Mothers, Fathers and Employment. Norwich: HMSO.

Bretherton, I. (1992) The origins of attachment theory: John Bowlby and Mary Ainsworth. Developmental Psychology, 28, 759-775.



Burman, E. (1991) Power, gender and developmental psychology. Feminism and Psychology, 1, 141-153.

Carey, W.B. (1973) Measurement of infant temperament in paediatric practice. In J.C. Westman (Ed.), Individual differences in children. New York: Wiley.

Cassidy, J. and Kobak, R. (1988) Avoidance and its relation to other defensive processes. In J. Belsky and T. Nezworski (Eds.), Clinical implications of attachment. London: Methuen.

Cassidy, J., Kirsh, S.J., Scolton, K.L. and Parke, R.D. (1996) Attachment and representations of peer relationships. Developmental Psychology, 32(5), 892-904.

Clarke-Stewart, K.A. (1989) Infant day care: Maligned or malignant? American Psychologist, 44, 266-273.

Collins, N.L. and Read, S.J. (1990) Adult attachment, working models and relationship quality in dating couples. Journal of Personality and Social Psychology, 58(4), 644-663.

Crowell, J.A., Treboux, D., and Waters, E. (1999) The adult attachment interview and the relationship questionnaire: Relations to reports of mothers and partners. Personal Relationships, 6, 1-18.

De Wolff, M.S. and van Ijzendoorn, M.H. (1997) Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. Child Development, 68(4), 571-591.

DeMeis, D.K., Hock, E., and McBride, S.L. (1986) The balance of employment and motherhood: Longitudinal study of mothers' feelings about separation from their first-born infants. Developmental Psychology, 22, 627-632.

Department of Health (1997) Children's Day Care Facilities at 31 March 1996. London: Stationery Office.

Fagot, B.I., Gauvain, M., and Kavanagh, K. (1996) Infant attachment and mother-child problem-solving: A replication. Journal of Social and Personal Relationships, 13(2), 295-302.

Fish, M. and Belsky, J. (1991) Temperament and attachment revisited: Origin and meaning of separation intolerance at age three. American Journal of Orthopsychiatry, 61(3), 418-427.

Fonagy, P., Steele, M., Steele, H., and Target, M. (1997) Reflective-Functioning Manual, Version 4.1 For application to adult attachment interviews. Psychoanalysis Unit, University College, London.

Fox, N., and Fein, G. (1990) Infant day-care: The current debate. Norwood, NJ: Ablex.

George, C., Kaplan, N., and Main, M. (1985) The Berkely Adult Attachment Interview. Berkely, CA: University of California.

Gnezda, M.T. (1983) The nature of maternal separation anxiety as it relates to employment-related separations. Unpublished doctoral dissertation, Department of Family Relations and Human Development, Ohio State University.

Greenberg, M.T., Chicetti, D., and Cummings, E.M. (1990) Attachment in the pre-school years. Chicago: University of Chicago Press.

Guralnik, M.J. and Neville, B. (1997) Designing early intervention programs to promote children's social competence. In M.J. Guralnick (Ed.), Handbook of infant mental health. London: The Guildford Press.

Hazen, C. and Shaver, P.R. (1994) Attachment as an organizational framework for research on close relationships. Psychological Inquiry, 5, 1-22.

Hinde, R.A. (1984) Alternative approaches to child rearing and their effects on the mother-infant relationship. Urbana, IL: Educational Resources Information Centre/Early Child Education (ED 122943).

Hock, E. DeMeis, D., and McBride, S. (1988) Maternal separation anxiety: Its role in the balance of employment and motherhood in mothers of infants. In A. Gottfried and A. Gottfried (Eds), Maternal employment and children's development: Longitudinal research. New York: Plenum.

Hock, E., Gnezda, M.T. and McBride, S. (1983) The measurement of maternal separation anxiety. Paper presented at the biennial meeting of the Society for Research in Child Development. Detroit.

Hock, E., McBride, S., and Gnezda, M.T. (1989) Maternal Separation Anxiety: Mother-infant separation from the maternal perspective. Child Development, 60, 793-802.

Howes, C., and Hamilton, C. (1992) Children's relationships with child care teachers: Stability and concordance with parental attachments. Child Development, 63, 467-878.

Jaeger, E. and Weinraub, M. (1990) Early maternal care and infant attachment: In search of process. In K. McCartney (Ed.), Child care and maternal employment: A social ecology approach (pp. 71-90). London: Methuen.

Karen, R. (1994) Becoming attached. New York: Warner.

Kochanska, G. (1995) Children's temperament, mother's discipline and security of attachment: Multiple pathways to emerging internalization. Child Development, 66(3), 597-615.

Lamb, M., and Steinberg, K. (1990) Do we really know how day-care affects children? Journal of Applied Developmental Psychology, 11, 351-379.

Levy, D.M. (1943) Maternal overprotection. New York: Columbia University Press.

Lewis, S. (1991) Motherhood and Employment: The Impact of Social and Organizational Values. In A. Phoenix, A. Woollett, and E. Lloyd (Eds), Motherhood: Meanings, Practices and Ideologies. London: Sage.

Lutz, W.J. and Hock, E. (1994) Maternal Separation Anxiety: Relations to adult attachment representations in mothers of infants. London: Methuen.

Macoby, E., and Martin, J. (1983) Socialization in the context of the family. In P. Mussen (Ed.), Handbook of child development (vol. 4). New York: Academic Press.

Main, M. (1991) Metacognitive knowledge, metacognitive monitoring and singular (coherent) vs multiple (incoherent) model of attachment: Findings and directions for future research. In C.M. Parkes, J. Stevenson-Hinde, and P. Marris (Eds.), Attachment Theory. Chicago: University of Chicago Press.

Main, M. (1994) Discourse, prediction and recent studies in attachment: Implications for psychoanalysis. Chicago: University of Chicago Press.

Main, M. and Goldwyn, R. (1984) Predicting rejection of her infant from mother's representation of her own experience. Child Abuse and Neglect, 8, 203-217.

Main, M. and Hesse, E. (1990) Parents' unresolved traumatic experiences are related to infant disorganised attachment status: Is frightened and/or frightening parental behaviour the linking mechanism? In M.T. Greenberg, D. Cicchetti, and E.M. Cummings (Eds.) Attachment in the Pre-School Years: Theory, research and innovation (pp. 161-184). Chicago: University of Chicago Press.

Main, M., and Solomon, J. (1990) Procedures for identifying disorganised/disoriented infants in the Ainsworth Strange Situation. In M. Greenberg, D. Cicchetti, and M. Cummings, (Eds.), *Attachment in the pre-school years: Theory, research and intervention* (pp. 121-160). Chicago: University of Chicago Press.

Main, M., Kaplan, N. and Cassidy, J. (1985) Security in infancy, childhood and adulthood: A move to the level of representation. In I. Bretherton and E. Waters (Eds.) Growing points of attachment theory and research. Monographs of the Society for Research in Child Development, 50 (1-2, Serial No. 209), 66-104.

Morgan, A. (1996) Who Needs Parents. London: Methuen.

McBride, S. and Belsky, J. (1988) Characteristics, determinants and consequences of maternal separation anxiety. Developmental Psychology, 24(3), 407-414.

McBride, S.L. (1983) The nature and measurement of maternal separation anxiety in mothers of 3-to 4-month old infants. Unpublished doctoral dissertation, Ohio State University, Columbus.

Moss, E., Parent, S., Gosselin, C., Rousseau, D. and Stlaurent, D. (1996) Attachment and teacher-reported behaviour problems during the pre-school and early school-age period. Development and Psychopathology, 8(3), 511-525.

NICHD Early Child Care Network (1994) Child Care and child development: The NICHD study of early child care. In S. Friedman and H.C. Haywood (Eds.), Developmental follow-up: Concepts, domains and methods (pp. 377-396). New York: Academic Press.

NICHD Early Child Care Research Network (1994) Child care and child development: The NICHD study of early child care. In S. Friedman and H.C. Haywood (Eds.), Developmental follow-up: Concepts, domains and methods (pp. 377-396). New York: Academic Press.

NICHD Early Child Care Research Network (1997) The effects of infant child care on infant-mother attachment security: Results of the NICHD study of early child care. Child Development, 68(5), 860-879.

Office for National Statistics (1997), Social Trends 27. London: Stationery Office.

Office for National Statistics (1998) and ESRC Swindon. The ESRC Review of Government Social Classifications.



Owen, M., and Cox, M. (1988) Maternal employment and the transition to parenthood. In A.E. Gottfried and A.W. Gottfried (Eds.) Maternal employment and children's development: Longitudinal research. New York: Plenum Press.

Pitzer, (1984) A study of maternal separation anxiety in working mothers of second-born infants. Unpublished doctoral dissertation, Ohio State University.

Roggman, L., Langlois, J., Hubbs-Tait, L., and Reiser-Danner, L. (1994) Infant day-care, attachment and the "file drawer problem". Child Development, 65, 1429-1443.

Rutter, M. (1981) Socioemotional consequences of day-care for preschool children. American Journal of Orthopsychiatry, 51, 4-28.

Rutter, M. (1985) Family and School Influences on Cognitive Development. Journal of Child Psychology and Psychiatry, 26(5), 603-704.

Rutter, M. (1995) Clinical implications of attachment concepts: Retrospect and prospect. Journal of Child Psychology and Psychiatry, 36(4), 549-571.

Rutter, M. (1996) Connections between child and adult psychopathology. European Child and Adolescent Psychiatry, 1(1), 4-7.

Scarr, S. (1984) Mother care, other care. New York: Basic.

Scarr, S. and Dunn, J. (1987) In S. Scarr, (Ed.), Mother Care: Other Care. Harmondsworth: Penguin Books, second edition, 1987, p.20.

Select, Health and Committee (1997) Child and Adolescent Mental Health Services (HC 26-1). House of Commons.

Simpson, J. (1990) Influence of attachment styles on romantic relationships. Journal of Personality and Social Psychology, 59, 971-980.

Spieker, S.J. and Booth, C.L. (1988) Maternal antecedents of attachment quality. In J. Belsky and T. Nezworski (Eds.), Clinical implications of attachment (pp. 95-135). Hillsdale, NJ: Erlbaum.

Sroufe, L.A. (1985) Attachment classification from the perspective of the infant-caregiver relationships and infant temperament. Child development, 56, 1-14.

Sroufe, L. A. (1988) The role of infant-caregiver attachments in developmental psychology. In J. Belsky and T. Nezworski (Eds) Clinical implications of attachment (pp. 18-38). Hillsdale, NJ: Erlbaum Associates.

Stifter, C.A. and Coulehan, C.M. (1993) Linking Employment to Attachment: The Mediating Effects of Maternal Separation Anxiety and Interactive Behaviour. Child Development, 64, 1451-1460.

Symons, D.K. (1998) Post-partum employment patterns, family-based care arrangements, and the mother-infant relationship at age two. Canadian Journal of Behavioural Science, 30, 121-131.

Teo, A., Carlson, E., Mathieu, P.J., Egeland, B. and Sroufe, L.A. (1996) A prospective longitudinal study of psychosocial predictors of achievement. Journal of School Psychology, 34(3), 285-306.

The Guardian (2000) 'I'll never regret trading my job for my children'. 14th June, 2000. P.4.

The Sunday Times (1998) 'Comment and Analysis: Not guilty, baby'. 24<sup>th</sup> May, 1998. p 1.

Thompson, R.A., Connell, J.P. and Bridges, L.J. (1998) Temperament, emotion and social interactive behaviour in the strange situation: an analysis of attachment system functioning. Child Development, 59, 1102-1110.

Tizard, B. (1991) Employed mother and the care of young children. In A. Phoenix, A. Woollett, and E. Lloyd (Eds), Motherhood: Meanings, Practices

and Ideologies. London: Sage.

Van Ijzendoorn, M.H. (1995) Adult attachment representations, parental responsiveness, and infant attachment: Traditional and non-traditional approaches. Oxford: North-Holland.

Van Ijzendoorn, M.H., Dijkstra, J. and Bus, A.G. (1995) Attachment, Intelligence and Language – A Meta-Analysis. Social Development, 4(2), 115-128.

Vaughn, B.E., Stevenson-Hinde, J., Waters, E., Kotsaftis, A., Lefever, G.B., Shouldice, A., Trudel, M., and Belsky, J. (1992) Attachment security and temperament in infancy and early childhood: some conceptual clarifications. Developmental Psychology, 28, 463-473.

Verscheuren, K., Marcoen, A. and Schoefs, V. (1996) The internal working model of the self, attachment and competence in five year olds. Child Development, 67(5), 2493-2511.

## **Section 6**

# ***Appendices***

## **Section 6: Appendices**

### **Appendix Contents**

1. Information letter (main study)
2. Socio-Economic Classification (SEC) – brief summary
3. Infant Characteristics Questionnaire (ICQ)
4. Caregiver Interaction Scale (CIS) – adaptations and rating system for current study
5. Maternal Separation Anxiety Scale (MSAS)
6. Summary of behaviours to be rated in Strange Situation Procedure
7. Information letter (current study)
8. Confirmation letter
9. Strange Situation Procedure – abbreviated
10. Prompt sheet for mothers
11. Ethical approval
12. Tables 1 and 2: Kolmogorov-Smirnov values and Levene's statistics
13. Table 3: Correlation coefficients and significance values between levels of maternal separation anxiety and other linear variables

## Appendix 1

### Information letter (main study)

#### INFORMATION SHEET FOR PARENTS

##### Families Children and Child Care

##### A study of children's development and the different kinds of care they receive

We are studying how babies and young children develop and the different ways they are cared for. It is planned to study many aspects of children's development and we hope to build a detailed picture of what goes into looking after children.

Most of our information about babies' development will come from interviews with mothers; we will also be asking mothers to fill in questionnaires. The questionnaires will be completed with the help of the researcher or by the mother in her own time. If you decide to take part you will be visited in your home, at a time arranged to suit you and beginning when your baby is 3 months old. Subsequent visits would take place at 10 months and again at 15 months.

When we begin at 3 months you would be asked questions about your child's, growth, health and general development. We would be interested in how you are feeling, how the family in general is functioning and would like to learn about your plans for child care, if any. At subsequent visits we would carry out developmental assessments and would hope to make a videotape of your child and you during play and feeding. We would be happy to give you a copy of any videotape we make of your child. On some occasions we would also hope it might be possible to talk to your partner and any other adults who are involved in your child's care. Nothing would be done without your permission. A member of our research team, which includes Dr Catherine Baillie, Mrs Beverley Davies, Mrs Lindsay Hague, Miss Cath McDowell and Mrs Angela Triner would carry out the visits. The visits will last up to 2 hours.

All the information you provide would be strictly confidential.

There is no obligation for you to participate in this study. If you agree to do so, however, you would be free to withdraw at any time.

Professor Kathy Sylva  
Reader in Educational Studies

## Appendix 2

### SEC

The ESRC Review of Government Social Classifications was established at the instigation of the Office for National Statistics (ONS, then OPCS) in October 1994. Its remit was to review the characteristics, use and perceptions of *Social Class based on Occupation* (SC) and *Socio-economic Groups* (SEG), to review existing alternative social classifications, and to propose recommendations for the revision of government social classifications. Their recommendation was that, given their recognized conceptual and operational deficiencies, SC and SEG should be replaced by a single socio-economic classification (SEC).

Based conceptually on employment relations theory, the new SEC unites the most important features and advantages of *Social Class based on Occupation* and *Socio-economic Groups*, and allows a high degree of continuity with these predecessors. Employment relations theory does not assume that there are  $x$  and only  $x$  number of classes. Rather it argues that the number of classes to be recognised empirically depends upon the analytical purposes at hand. The SEC is thus to be regarded as an *instrument du travail*, offering as it does 9, 8, 5 or 3 class models as alternatives to the full scale. The full and collapsed scales are presented in figure 1 (over).



**Figure 1 The new Socio-Economic Classification**

Full version	Nine class	Eight class	Five class	Three class		
L1 Employers (large)	1A Higher managerial	1 Higher managerial And professional	1 Managerial And professional	I Managerial And professional		
L2 Managers (large)						
L3 Professionals	1B Professionals					
L4 Associate professionals	2 Lower managerial and professional	2 Lower managerial and professional				
L5 Managers (small)						
L6 Higher supervisors						
L7 Intermediate occupations	3 Intermediate	3 Intermediate	2 Intermediate	II Intermediate		
L8 Employers (small)	4 Small employers And own account workers	4 Small employers And own account workers	3 Small employers And own account workers			
L9 Own account						
L10 Lower supervisors	5 Supervisors/ craft related	5 Supervisors/ craft related	4 Supervisors/ craft related	III Working class		
L11 Craft and related occupations						
L12 Semi routine occupations	6 Semi routine occupations	6 Semi routine occupations	5 Working class			
L13 Routine occupations	7 Routine occupations	7 Routine occupations				
L14 Never worked/ long term unemployed	8 Never worked/ long term unemployed	8 Never worked/ long term unemployed				

### ESRC full SEC scale

#### **L1 Employers in Large Organizations**

*Position occupied by persons who employ others (and thus assume some degree of control over them) in organizations employing 25 or more persons, and who delegate some part of their managerial and entrepreneurial functions on to salaried staff.*

#### **L2 Managers in Large Organizations**

*Positions in which there is a 'service relationship' with the employer, and involving general planning and supervision of operations on behalf of the employer, in organizations employing 25 or more persons.*

### **L3 Professionals**

#### **L3.1 'Traditional' professionals**

#### **L3.2 'New' professionals**

*Positions, whether occupied by employers, the self-employed or employees, covering all types of professional work. Employees in these groups have a 'service relationship' with their employer.*

### **L4 Associate Professionals**

#### **L4.1 'Traditional' associate professionals**

#### **L4.2 'New' associate professionals**

*Positions, whether occupied by employers, the self-employed or employees, and covering occupations ancillary to the professions. Employees in these groups have an attenuated form of the 'service relationship'.*

### **L5 Managers in small Organizations**

*Positions in which there is an attenuated 'service relationship', and where those employed in these positions generally plan and supervise operations on behalf of the employer, in organizations employing less than 25 persons.*

### **L6 Higher Supervisors**

*Positions (other than managerial) having an attenuated form of 'service relationship' which cover intermediate occupations included in L7 and involve formal and immediate supervision of others engaged in such occupations.*

### **L7 Intermediate Occupations**

#### **L7.1 Intermediate clerical and administrative occupations**

#### **L7.2 Intermediate service occupations**

#### **L7.3 Intermediate technical occupations**

*Positions not involving general planning or supervisory powers, in clerical, administrative, service and lower technical occupations. Positions in this group are 'mixed' in terms of employment regulation, i.e. are intermediate with respect to the service relationship and the Labour contract.*

### **L8 Employers in Small Organizations**

#### **L8.1 Employers in small organizations (less than 25 employees) in industry, commerce, services etc**

#### **L8.2 Employers in small organizations (less than 25 employees) in agriculture**

*Persons (other than Professionals and associate professionals) who employ others (and thus assume some degree of control over them) and carry out all or most of the entrepreneurial and managerial functions of the organization but employ less than 25 employees.*

### **L9 Own Account Workers**

**L9.1** Own account workers (non – professional)

**L9.2** Own account workers in agriculture

*Self-employed positions in which the persons involved are engaged in any trade, personal service, semi-routine, routine or other occupation but have no employees other than family workers.*

### **L10 Lower Supervisors**

*Positions (other than managerial) having a modified form of 'labour contract', which cover occupations included in groups 11-13, and involve formal and immediate supervision of others engaged in social occupation.*

### **L11 Craft and Related Occupations**

*Positions in which employees are engaged in craft and related occupations and thereby have a modified form of the 'labour contract'.*

### **L12 Employees in Semi-Routine Occupations**

**L12.1** Semi-routine sales occupations

**L12.2** Semi-routine service occupations

**L12.3** Semi-routine technical occupations

**L12.4** Semi-routine operatives

**L12.5** Semi-routine agricultural workers

*Positions in which employees are engaged in semi-routine occupations which have a labour contract.*

### **L13 Employees in Routine Occupations**

**L13.1** Routine service occupations

**L13.2** Routine production occupations

**L13.3** Routine operatives

*Positions where employees are engaged in routine occupations which have a basic labour contract.*

**L14 Never Worked and Long Term Unemployed**

**L14.1 Never worked**

**L14.2 Long term unemployed**

*Positions which involve exclusion from the Labour market compromising (a) those who have never been in paid employment but would wish to be; and (b) those who have been unemployed for an extended period while still seeking or wanting work.*

**L15 Full Time Students**

*Persons over 16 years of age who are pursuing full time courses of study in secondary, tertiary or higher education institutions.*

**L16 Occupations not Stated or Inadequately Described**

**L17 Not Classifiable for Other Reasons**

## Appendix 3

### ICQ

#### BABY'S CHARACTERISTICS

We are interested in the many different ways that babies behave. All babies are different. Some may cry more whilst others are very active. For the following questions please choose the number which is most like your baby. The option "about average" means how you think the typical baby would behave.

1. How consistent is your baby in sticking to his/her sleeping routine?

1	2	3	4	5	6	7
very consistent; little or no variability			some variability			very inconsistent; highly variable

2. How many times per day, on the average, does your baby get fussy and irritable – for either short or long periods of time?

1	2	3	4	5	6	7
never	1-2 times per day	3-4 times per day	5-6 times per day	7-9 times per day	10-14 times per day	difficult more than 15 times per day

3. How much does your baby cry and fuss in general?

1	2	3	4	5	6	7
very little; much less than the average baby			average amount; about as much as the average baby			a lot; much more than the average baby

4. How does your baby typically respond to new foods?

1	2	3	4	5	6	7
always responds favourably			responds favourably about half the time, or is always neutral			always responds negatively or fearfully

How does your baby typically respond to a new person?

1	2	3	4	5	6	7
always responds favourably			responds favourably about half the time, or is always neutral			always responds negatively or fearfully

6. How does your baby typically respond to being in a new place?

1	2	3	4	5	6	7
almost always responds favourably			responds favourably about half of the time, or is always neutral			almost always responds negativ or fearfully

7. How well does your baby adapt to new experiences (such as in questions 4-6) eventually?

1	2	3	4	5	6	7
very well, always likes it eventually			ends up liking it about half the time			almost always dislikes it in the e

8. How easily does your baby get upset?

1	2	3	4	5	6	7
very hard to upset – even by things that upset most babies			about average			very easily upset by things that wouldn' bother most babies

9. How active is your baby in general?

1	2	3	4	5	6	7
very calm and quiet			average			very active and vigorous

10. How much does your baby smile and make happy sounds?

1	2	3	4	5	6	7
a great deal, much more than most infants			an average amount			very little, much less than most infants

11. How much does your baby enjoy playing games with you?

1	2	3	4	5	6	7
a great deal, really loves it			about average			very little, doesn't like it very much

12. How does your baby respond to disruptions and changes in the everyday routine, such as when you go shopping or on a trip, etc.?

1	2	3	4	5	6	7
very favourably; doesn't get upset			about average			very unfavourably; gets quite upset

13. How changeable is your baby's mood?

1	2	3	4	5	6	7
changes seldom, and changes slowly when he/she does change			about average			changes often and rapidly

14. How excited does your baby become when people play with or talk to him/her?

1	2	3	4	5	6	7
very excited			about average			not at all excited

15. On the average, how much attention does your baby require, other than for caregiving (feeding, nappy changes, etc.)?

1	2	3	4	5	6	7
very little – much less than average			average amount			a lot – much more than the average baby

16. When left alone how often does your baby play well by himself/herself?

1	2	3	4	5	6	7
almost always			about half the time			almost never – won't play by self

17. How much does your baby cuddle and snuggle when held?

1	2	3	4	5	6	7
a great deal – almost every time			average, sometimes does and sometimes does not			very little; seldom cuddles

18. Does your baby persist in playing with objects when s/he is told to leave them alone?

1	2	3	4	5	6	7
rarely or never persists			sometimes does and sometimes not			almost always persists

19. Does your baby continue to do something even when told something like 'stop', 'come here', 'no-no'?

1	2	3	4	5	6	7
rarely or never persists			sometimes does and sometimes not			almost always persists

20. When removed from something s/he is interested in but should not be getting into, how often does your baby get upset?

1	2	3	4	5	6	7
never			sometimes does and sometimes not			always gets very upset

21. How persistent is your baby in trying to get your attention when you are busy?

1	2	3	4	5	6	7
doesn't persist at all			will try, but will only mildly persist			very persistent – will do anything to get attention

22. Please rate the overall degree of difficulty your baby would present for the average mother.

1	2	3	4	5	6	7
super easy			ordinary, some problems			highly difficult to deal with



## Appendix 4

### Adaptations to CIS

Adaptation of the CIS items for use with 10 month old babies in nurseries, childminders and home settings (subject to piloting) are as follows:

Replace all 'children' for 'the baby'.

Item 3. Listens attentively when children **speak** to her

Replace speak with 'when the baby **communicates** with her' (e.g. babbling etc.)

Item 4. Places high value on obedience

Shouldn't use ? Inappropriate with 10mth old baby.

Item 8. Difficult to assess in relatively short visit, especially for young babies. Suggest we drop.

Item 7. When children misbehave, explains the reason for the rule they are breaking. Difficult with infants, could replace with 'When intervenes in or prohibits baby's behaviour, **communicates** the reason why, to the baby'.

Item 9. Doesn't try to exercise much control over children

Could change to 'Exercises little or no control over the baby' (based on EPPE wording).

Item 12. Threatens children in trying to control them.

Shouldn't use ? Inappropriate with 10mth old baby.

Item 15. Doesn't reprimand children when they misbehave.

Could change to 'Ignores the baby when his/her behaviour should be corrected'.

Item 16. Talks to children on a **level they understand**.

In training, need to clarify this item and the 'level they understand' with all observers.

Item 17. Punishes the children without explanation.

Inappropriate for 10mth baby. Suggest 'Intervenes or prohibits baby's behaviour without explanation'.

Item 19. Encourages children to exhibit prosocial behaviour eg. Sharing, co-operating.

Shouldn't use ? Inappropriate with 10mth old baby.

Item 21. Doesn't seem interested in the children's activities

Could change to 'Interested in the children's activities' (based on EPPE Wording)

Item 23. Doesn't supervise the children very closely.

Could change to 'Supervises the baby closely' (EPPE Wording)

Item 24. Expects children to exercise self-control, eg. To be undistruptive for group, teacher led activities, to be able to stand in line calmly.

Need to change. Suggest "Expects baby to be able to wait a short time for attention".

Item 26. Seems unnecessarily harsh when scolding or prohibiting children.

? Inappropriate with 10mth old baby. Try piloting.

## Appendix 4 contd.

CIS: Revised Version

Caregiver Interaction Scale: Revised Version CB09/11/98

Observer: To what extent are each of the following statements characteristic of this caregiver? For each item select from 1 to 4, where 1 = not at all and 4 = very much.

CIS Item#		Score			
		1	2	3	4
1	Speaks warmly to the baby				
2	Seems critical of the baby				
3 <sub>(PR)</sub>	Listens attentively when baby communicates with her				
5	Seems distant or detached from the baby				
6	Seems to enjoy the baby				
7 <sub>(PR)</sub>	When intervenes in or prohibits baby's behaviour, communicates reason why				
8	Encourages the baby to try new experiences				
9 <sub>(PR)</sub>	Exercises little or no control over the baby				
10	Speaks with irritation or hostility to the baby				
11	Seems enthusiastic about the baby's activities or efforts				
13	Spends considerable time in activity not involving interactions with the baby				
14	Pays positive attention to the baby				
15 <sub>(PR)</sub>	Ignores the baby when his/her behaviour should be corrected				
16	Talks to the baby on a level s/he can understand				
17 <sub>(PR)</sub>	Intervenes in or prohibits baby's behaviour without explanation				
18	Exercises firmness when necessary				
20	Finds fault easily with the baby				
21	Interested in the baby's activities				
22	Seems to prohibit many of the things the baby wants to do				
23	Supervises the baby closely				
24 <sub>(PR)</sub>	Expects baby to be able to wait a short time for attention				
25	When talking to the baby kneels bends or sits at their level to establish better eye contact				
26 <sub>(P)</sub>	Seems unnecessarily harsh when scolding or prohibiting the baby				

## Appendix 5

MSASYOU AND YOUR BABY

The following statements represent matters of interest and concern to parents. Not all people feel the same way about them. Answer the statements as you are feeling now, or, where appropriate how you think you will feel in the future. Try to answer all statements without skipping items or looking back. Read each statement carefully and tick the choice which most closely reflects YOUR degree of agreement or disagreement.

	Strongly Disagree	Disagree	Mildly Agree	Agree	Strongly Agree
1. I miss holding or cuddling my baby when I am away from him/her.					
2. My baby is happier with me than with other carers.					
3. Babies will be afraid in a new place without their mother.					
4. My life wouldn't be complete without a job.					
5. If a child is independent and outgoing, s/he will make friends easily without his/her mother's help.					
6. When away from my baby, I often wonder if his/her physical needs (dry nappies, enough to eat, etc.) are being met.					
7. Holding and cuddling my baby makes me feel so good that I really miss the physical closeness when I'm away.					
8. I am more concerned with my baby's physical safety than other carers.					
9. It would be/is difficult for my baby to adjust to someone else taking care of him/her.					
10. I would resent a job if it meant I had to be away from my baby for too long.					
11. My baby will benefit from group experiences (i.e. nursery, child care centre) since they will provide him/her social experiences that s/he could not get at home.					
12. When I am away from my baby, I feel lonely and miss him/her a great deal.					
13. Only a mother naturally knows how to comfort her distressed baby.					
14. A baby is likely to get upset when s/he is left with another carer.					
15. I have a thought-out plan for how I'm going to develop my career.					
16. It is good for my baby to spend time away from me so that s/he can learn to deal independently with unfamiliar people and new situations.					
17. I like to have my baby close to me most of the time.					

	Strongly Disagree	Disagree	Mildly Agree	Agree	Strong Agree
18. I am naturally better at keeping my baby safe than any other person.					
19. I believe that my baby misses me when I have to let someone else take care of him/her for awhile.					
20. A career or job brings me a lot of personal satisfaction.					
21. Even though my baby fusses a bit when I leave, I know s/he will be OK in a few minutes after I'm out of sight.					
22. I don't like to leave my baby.					
23. My baby prefers to be with me more than with anyone else.					
24. My baby is afraid and sad when s/he is not with me.					
25. I would not regret postponing my career in order to stay home with my baby.					
26. My baby needs to spend time away from me in order to develop a sense of being an individual in his/her own right.					
27. When I am separated from my baby, I wonder whether s/he is crying and missing me.					
28. I don't enjoy myself when I'm away from my baby.					
29. I worry that my baby is never completely comfortable in an unfamiliar setting if I am not with him/her.					
30. Babies are very demanding and I often wish I had more time for a career.					
31. Exposure to many different people is good for my baby.					
32. I worry when someone else cares for my baby.					
33. If I could choose between working full-time or staying home with my baby, I would want to stay home.					
34. There are times in the lives of young babies when they need to be with people other than their mothers.					
35. When I am away from my baby, I worry about whether or not my baby's caregiver or babysitter can soothe and comfort him/her if s/he is lonely or upset.					

## Appendix 6

### Summary of behaviours to be rated in Strange Situation Procedure

Attachment Category	Strange Situation behaviour
<u><b>Secure Attachment</b></u>  <b>B1 Pattern</b>  <b>B2 Pattern</b>  <b>B3 Pattern</b>  <b>B4 Pattern</b>	<ul style="list-style-type: none"> <li>- Good play and exploration (secure base behaviour) during pre-separation</li> <li>- Little distress on separation</li> <li>- Distance interaction on reunion (e.g. smile, vocalisation and show of toy)</li> <li>- some avoidance in the first reunion giving way to proximity seeking in the second</li> <li>- Secure base behaviour during pre-separation</li> <li>- Usually distressed during separation</li> <li>- Actively seeks proximity on reunion</li> <li>- Settles rapidly back to secure base behaviour on reunion</li> <li>- Pre-occupied with parent during pre-separation</li> <li>- Marked distress on separation</li> <li>- Seeks proximity on mother's return</li> <li>- Maintains prolonged contact on reunion but settles happily on parent's lap</li> <li>- May display some resistant behaviours</li> </ul>
<u><b>Insecure Avoidant Attachment</b></u>  <b>A1 Pattern</b>  <b>A2 Pattern</b>	<ul style="list-style-type: none"> <li>- Poorer quality play in pre-separation</li> <li>- Little or no distress on separation</li> <li>- Active avoidance of parent on reunion</li> <li>- Approach combined with strong avoidance in reunion episodes</li> </ul>
<u><b>Insecure Ambivalent Attachment</b></u>  <b>C1 Pattern</b>  <b>C2 Pattern</b>	<ul style="list-style-type: none"> <li>- Preoccupation with parent in pre-separation</li> <li>- Marked distress on separation</li> <li>- Seeks proximity on reunion</li> <li>- Displays anger and resistance to parent and fails to settle</li> <li>- Marked passivity and reduced secure base behaviour</li> <li>- Anger and resistance to contact</li> </ul>

## Appendix 7

### Information letter (current study)

Dear «Mothers\_First\_Name»

As you know, our project aims to study many aspects of how babies and young children develop and the different ways in which they are cared for. One of our interests is in the reaction of the child to an unfamiliar person. Meeting an unfamiliar person can happen in many different places, such as the GP surgery, the toddler group or in child care settings.

Since we saw you last, a new member, Miss Alex Robinson, has joined our team. Alex is particularly interested in babies' reactions to new people, how comfortable they are with unfamiliar adults and how they communicate to their mother when feeling uncertain or a little anxious.

We are interested in how «Babys\_name» responds to being in a new place, with unfamiliar toys and an unfamiliar adult. As we would like to see «Babys\_name» in a setting that is new to «Baby's\_name» we would like to invite you both to visit our playroom in Headington, Oxford (near the ring road). We would reimburse any travel expenses.

We should stress that there is no obligation on you to participate in this part of the study. If you agree to do so you are free to withdraw at any time.

Miss Alex Robinson will telephone you in the next few weeks to talk to you in more detail about this part of the study and to answer any questions you may have. If in the meantime you would like to contact us, please do not hesitate to get in touch on the above telephone number.

Yours sincerely

Dr Catherine Baillie  
Families, Children and Child Care Project

## **Appendix 7**

### **Information letter (current study)**

Dear «Mothers\_First\_Name»

As you know, our project aims to study many aspects of how babies and young children develop and the different ways in which they are cared for. One of our interests is in the reaction of the child to an unfamiliar person. Meeting an unfamiliar person can happen in many different places, such as the GP surgery, the toddler group or in child care settings.

Since we saw you last, a new member, Miss Alex Robinson, has joined our team. Alex is particularly interested in babies' reactions to new people, how comfortable they are with unfamiliar adults and how they communicate to their mother when feeling uncertain or a little anxious.

We are interested in how «Babys\_name» responds to being in a new place, with unfamiliar toys and an unfamiliar adult. As we would like to see «Babys\_name» in a setting that is new to «Baby's\_name» we would like to invite you both to visit our playroom in Headington, Oxford (near the ring road). We would reimburse any travel expenses.

We should stress that there is no obligation on you to participate in this part of the study. If you agree to do so you are free to withdraw at any time.

Miss Alex Robinson will telephone you in the next few weeks to talk to you in more detail about this part of the study and to answer any questions you may have. If in the meantime you would like to contact us, please do not hesitate to get in touch on the above telephone number.

Yours sincerely

**Dr Catherine Baillie**  
**Families, Children and Child Care Project**



## **Appendix 8**

### **Confirmation letter**

19th November, 1999

Dear [name of mother]

Thank you for agreeing to take part in this study. I am looking forward to meeting you and [infant's name] on Saturday, 11th December at 12 o'clock at the Isis Education Centre.

As you can see on the map (enclosed), the Centre is situated in the grounds of the Warneford Hospital in Headington, Oxford. It is the small, modern building that you see to your left as you enter the grounds of the hospital. Follow the road round to the back of the centre where there should be plenty of parking available. If you are coming by car please make sure to display the parking permit (enclosed) when you arrive.

I would be very grateful if you could also take a few minutes to fill in the questionnaire that I enclose with this letter and bring it with you when you come. If you have any difficulty completing it we can go through it together when we meet.

Once again I would like to thank you and [infant's name] for giving up your time to take part in this important study of child development.

Yours sincerely

**Miss Alex Robinson**  
**Families, Children and Child Care Project**

## Appendix 9

### Strange Situation Procedure – abbreviated

- **Episode 1 (mother, baby and researcher: 30 seconds)**

Say *"When I leave the playroom I would like you to briefly show your baby the toys and then go and sit on this chair. You can read the magazine if you wish. You can respond to your baby if he/she tries to get your attention but don't intentionally try to attract his/her attention"*.

<b>START RECORDING (NB FLASH CARD WITH PARTICIPANT NO.)</b>
---

- **Episode 2 (mother and baby: 3 minutes)**

At 2:58 ask stranger to enter room.

- **Episode 3 (mother, baby and stranger: 3 minutes)**

At 1 minute give **single knock** to signal S to initiate conversation with M.

At 2 minutes give **single knock** to signal S to initiate play with baby.

At 3 minutes give **double knock** to signal M to leave the playroom.

- **Episode 4 (baby and stranger: 3 minutes or less)**

Ask mother to go back in **if baby cries for > 30 secs.**

Say *"Pause by the door to see what your baby does. Pick up your baby if he/she wants. When he/she has settled, reintroduce him/her to the toys and then return to your chair"*.

**If baby not distressed, at 2.30** give single knock to cue stranger that episode about to end. Stranger to leave once mother back in room but must be careful not to interfere with reunion.

Say to mother:

1? *Knock on the door of the playroom and call your baby's name.*

2? *Pause a moment.*

3? *Open the door, enter the room and then call your baby's name again.*

4? *Pause for a moment by the door to see your baby's reaction.*

5? *Pick your baby up if he/she wants.*

6? *When your baby has settled reintroduce him/her to the toys.*

7? *Return to your chair.*

- **Episode 5 (First reunion mother and baby: 3 minutes or longer, max 6 minutes)**

Extend if baby takes a long time to settle and resume exploration.

- **Episode 6 (Baby alone: 3 minutes or less)**

Double knock on door to signal mother to leave.

If baby cries for >30 secs ask stranger to go into playroom.

- **Episode 7 (baby and stranger: 3 minutes or less)**

Ask mother to go back in if baby cries for >30 secs.

Say *"Pause by the door to see what your baby does. Pick your baby up if he/she wants. When he/she has settled reintroduce him/her to the toys and then return to your chair."*

**If baby not distressed, at 2.30** give single knock to cue stranger that episode about to end. Stranger to leave once mother back in room but must be careful not to interfere with reunion.

Say to mother:

*1? Knock on the door of the playroom and call your baby's name.*

*2? Pause a moment.*

*3? Open the door, enter the room and then call your baby's name again.*

*4? Pause for a moment by the door to see your baby's reaction.*

*5? Pick your baby up if he/she wants.*

*6? Then do whatever feels natural.*

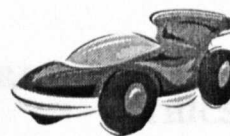
- **Episode 8 (second reunion: 3 minutes or more)**

Go into the playroom to signal the end of the procedure.

## Appendix 10

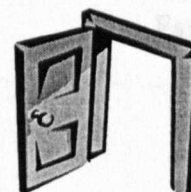
### Prompt sheet for mothers

I will show you and your baby into the playroom and then I will leave. Briefly show your baby the toys and then go and sit down on the chair. There is a magazine there for you to read if you wish. Feel free to respond to your baby as you normally would, but try not to attract his/her attention.



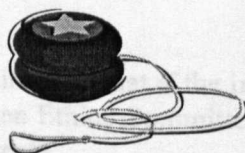
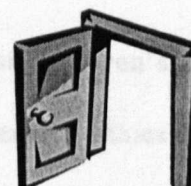
The researcher will now enter. She will introduce herself to you but don't try to speak to her until she begins a conversation with you.

You will hear two single knocks on the door. You should ignore these as they are signals for the researcher. When you hear a **double knock** come out of the room quietly, remembering to close the door firmly behind you.



After a few minutes I will tell you to go back into the playroom, and the researcher will come out. **Pause by the door** to see what your baby does. When you greet your baby you can pick him up if he wants. When he has settled re-introduce him to the toys and then go back to your chair.

When you hear another **double knock** pick a suitable moment to leave the room. You will be able to see your baby through a mirrored window.



After a few minutes I will tell you to go back into the playroom. Again, **pause by the door** to see what your baby does. When you greet your baby you can pick him up if he wants. When he has settled reintroduce him to the toys and then go back to your chair. I will come into the playroom after a few minutes and then the procedure is over.

So, there are 3 main things to remember:

1. You can respond to your baby, but do not initiate.
2. The researcher is acting as a stranger, so please don't talk to her until she begins a conversation with you.
3. Babies of this age often cry when their mother leaves the room. But if you feel your baby is getting too upset let me know.

## Appendix 11

### Ethical approval



#### OXFORDSHIRE PSYCHIATRIC RESEARCH ETHICS COMMITTEE



Manor House  
Headley Way, Headington  
Oxford OX3 9DZ

Tel: 01865 222692

Fax: 01865 222699

Our Ref. RJ/OB/O9.36

4 August 1999

Dr Catherine Baillie  
Oxford university  
Department of Educational Studies  
15 Norham Gardens  
Oxford OX2 6PY

Dear Dr Baillie

**Re: O99.36- Maternal Separation Anxiety, Maternal Employment and Security of Children's Attachment**

Thank you for submitting your research application to the Oxfordshire Psychiatric Research Ethics Committee (OPREC). It was discussed in detail at our meeting on 3 August 1999.

I am pleased to say that OPREC found no ethical problems with your proposed research, and gave its unanimous approval

May I remind you that if the investigators do not follow the protocol, or make protocol changes without informing OPREC then Ethics Committee approval will be withdrawn. In addition OPREC should be made aware of any adverse events.

I wish you every success with this project.

Yours sincerely

A handwritten signature in cursive script, appearing to read "Robin Jacoby".

Prof Robin Jacoby  
Chairman  
Oxfordshire Psychiatric Research Ethics Committee

## Appendix 12

### Tables 1 and 2: Kolmogorov-Smirnov values and Levene Statistics

Table 1: Maternal separation anxiety data:

MSAS Sub-Scale	Kolmogorov-Smirnov-Z Score		Levene Statistic	
	Ten Month Data	Seventeen Month Data	Ten Month Data	Seventeen Month Data
Maternal Separation Anxiety (sub-scale 1)	.807	.719	.842	.358
Perception of Separation Effects (sub-scale 2)	.147	.75	.457	.668
Employment Related Separation Concerns (sub-scale 3)	.212	.942	.88	.790

Table 2: Infant age when mother plans child care, infant temperament, maternal sensitivity and hours of non-maternal child care data:

Variable	Kolmogorov-Smirnov-Z Score	Levene Statistic
Age of infant when mother plans to use non-parental child care	1.7**	3.8*
<u>Infant Temperament (ICQ)</u>		
Fussy, difficult, demanding	.57	1.9
Unadaptable	.97	1.2
Persistent	.81	.69
Unsociable	1.4	.79
<u>Maternal Sensitivity (CIS)</u>		
Positive Relationship	1.6*	2
Punitiveness	1.7*	.52
Detachment	1.8*	2
Total hours maternal separation	2.3**	1.9

\*  $p < .05$

\*\*  $p < .001$

## Appendix 13

**Table 3: Correlation Coefficients and significance values between levels of maternal separation anxiety and other linear variables**

Variable	Age plan CC	ICQ				CIS			Total hrs. sep.
		SS1	SS2	SS3	SS4	SS1	SS2	SS3	
MSA1 at ten months	.43**	.30*	.19	.28	-.14	-.02	.14	-.22	-.43**
MSA2 at ten months	.18	-.16	1.12	-.06	-.1	.03	-.01	.26*	-.21
MSA3 at ten months	.46**	1.1	-.06	.02	-.32**	-.13	-.1	-.19	-.57**
MSA1 at 17 months	N/A	.30*	-.06	.32**	-.14	-.11	.26*	-.16	-.23
MSA2 at 17 months	N/A	-.07	-.02	.28**	.12	-.11	.11	.002	-.15
MSA3 at 17 months	N/A	-.30*	-.18	.02	-.12	-.07	.04	-.25*	-.30*

\* p<.05

\*\* p<.001